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Leadership in the Time of So-Called Regulation

Has Compliance Been a Dangerous Corporate Legal Strategy All Along?

by William Devine¹

I

INTRODUCTION

One senses a touch of bitterness in the comments of those who opine publicly on the need for regulatory change.

Elon Musk, Twitter and Tesla CEO, contends regulation “hardens the arteries of civilization.”²

Elizabeth Warren, Senator from Massachusetts, contends large technology companies are “basically unregulated.” She contends they have “bulldozed competition,” and will “threaten our economy, our society and our democracy” unless new regulation wrests their oversight from “a bazillionaire who just plays by his own set of rules.”³

Mike Bloomberg, Wall Street billionaire, three-time New York mayor and one-time presidential candidate, had this to say in response to questions about the Dodd-Frank regulations enacted in the wake of the Great Recession: “The world adjusts to stupid laws...They just don’t pay attention.”⁴

¹ William Devine is general counsel, regulatory risk strategist, dealmaker, author and educator at William Devine Esquire in Silicon Valley, California. He is architect of WDE Regulatory Risk Model 2.0, and author of *The Law Is Always Late: A Global Investor’s Pocket Guide to Anticipating, Surviving and Capitalizing on the Regulatory Risks of the Future*. More at www.wdesquire.com.

² Ryan Bourne, *Elon Musk is Right About Government Rules and Regulations: They Don’t Die*, CATO INSTITUTE (Dec. 10, 2021), <https://www.cato.org/commentary/elon-musk-right-about-government-rules-regulations-they-dont-die>.

³ Patricia McKnight, *Elizabeth Warren Wants “Rules of the Road” for Big Tech*, NEWSWEEK (Apr. 28, 2022) <https://www.newsweek.com/elizabeth-warren-wants-rules-road-big-tech-1701991>; See Press Release, Elizabeth Warren, Senator, Warren Delivers Remarks at Freedom from Facebook and Google: Break Up Big Tech (May, 27, 2021), <https://www.warren.senate.gov/newsroom/press-releases/warren-delivers-remarks-at-freedom-from-facebook-and-google-break-up-big-tech>.

⁴ Kevin Dugan, *Bloomberg Says Dodd-Frank Regulations Are “Stupid Laws,”* N.Y. POST (Nov. 11, 2014), <https://nypost.com/2014/11/11/bloomberg-says-dodd-frank-regulations-are-stupid-laws/>; Profile, *Michael Bloomberg*, FORBES, <https://www.forbes.com/profile/michael-bloomberg/?sh=7984077c1417> (last visited Feb. 22, 2023).

Shoshana Zuboff, Harvard professor emerita, social psychologist and surveillance capitalism archenemy, had this to say when asked how she feels about surging global interest in tougher Internet platform regulation: “I feel great about it.”⁵

Ron Johnson, Senator from Wisconsin, had this to say during his Senate campaign about a then-pending Supreme Court case that could have invalidated requirements imposed on Americans by a health care law: “[W]hat’s at stake here is our last shred of freedom.”⁶

Vera Jourova, European Commission Vice President for Values and Transparency, had this to say about the regulatory era that she expects has come to an end with the European Union’s implementation of the recently passed Digital Services Act and Digital Markets Act: “The time of the Wild West is over.”⁷

Whether they are pressing for more regulation or less, these people all find regulation as is to be inadequate for society’s purposes. They are all convinced we live in a time when so-called regulations only funnel us toward some form of tyranny and economic dystopia.

Corporate leaders worldwide recognize the fury of this ideological war and the political horsepower of its antagonists. Regulatory change ranks #2 on the list of concerns named by 4,410 global CEOs PwC surveyed for its 2023 CEO Survey. More than half those polled believe that regulatory change will either increase or decrease their industry’s profitability “to a large extent” or “to a very large extent” in the coming ten years.⁸

How might such regulatory change impact corporate compliance programs? That’s a question. Given the fury with which the war is being fought, new regulations—maybe tougher, maybe weaker—could indeed be instituted.

⁵ Lauren Jackson, *Shoshana Zuboff Explains Why You Should Care about Privacy*, N.Y. TIMES (May 21, 2021), <https://www.nytimes.com/2021/05/21/technology/shoshana-zuboff-apple-google-privacy.html>.

⁶ Tim Mak, *Senator Sees “Last Shred of Freedom,”* POLITICO (Mar. 27, 2012), <https://www.politico.com/story/2012/03/sen-johnson-last-shred-of-freedom-074517>.

⁷ David Walsh, *“The Time of the Wild West Is Over,” EU’s Vera Jourova Warns Elon Musk’s Twitter from Davos*, EURONEWS (Jan. 19, 2023), <https://www.euronews.com/next/2023/01/19/the-time-of-the-wild-west-is-over-eu-vera-jourova-warns-elon-musk-twitter-from-davos-wef>.

⁸ *PwC 26th Annual Global CEO Survey*, PWC.COM, https://www.pwc.com/gx/en/issues/c-suite-insights/ceo-survey-2023.html?WT.mc_id=CT3-PL300-DM1-TR2-LS4-ND30-TTA9-CN_gx-fy23-xlos-ceo-survey-&gclid=EAIaIQobChMIy-6kk5j6_AIVTNqGCh2nigg7EAAAYASAAEgLX6PD_BwE&gclsrc=aw.ds (last visited Feb. 15, 2023).

Yet for any CEO who's looking to lead an organization to its brightest future, and who understands organizations move in the direction of the questions they ask,⁹ the better question to ask might be one that looks well past compliance. One that acknowledges that, given the fury of the ideological war, and given the mounting complexity injected into the global marketplace by climate distress, tech disruption, demographic displacement, geopolitical fracture and societal fraying, the number and/or severity of harms and injustices relating to a company's business model that are not unlawful under current regulations may grow, and new regulation is unlikely to account for all of them.

Do corporations have responsibility beyond compliance—i.e., responsibility for addressing harms and injustices relating to their business model but not made unlawful by regulation?

This article makes the case that they do, not as a matter of charity or ethics, but rather as a matter of self-interest. It makes the case that a company's regulatory risk includes not just compliance failure but also regulatory inadequacy aka the possibility that regulation will be inadequate to prohibit business model-related harms and injustices that could trigger backlash that damages or even destroys the company. It makes the case that, by declining to address regulatory inadequacy, a company forfeits its opportunity to play a role as an economic leader and places its future in jeopardy.

The article begins with anecdotes on the Equal Pay Act's legislative origins that illustrate how the nature of law and regulation limits their ability to prevent harm and injustice. Anecdotes from healthcare cases involving state and federal antitrust law and education cases involving state charitable corporation law illustrate how compliance with existing law is by definition a flawed pursuit—i.e., a commitment to avoid contributing to some harms and injustices, yet also a tacit endorsement of other harms and injustices.

The article then examines the costs of a strategy that views compliance as the appropriate response to regulatory risk. A prominent board grappling with a high-profile, high-stakes fiduciary duty case demonstrates how, when one settles for doing one's minimum legal duty and no more, one forfeits reputational capital and the opportunity to lead. A federal aviation regulation case illustrates

⁹Joseph Mandato & William Devine, *Why the CEO Shouldn't Also Be the Board Chair*, HARV. BUS. REVIEW (Mar. 4, 2020), <https://hbr.org/2020/03/why-the-ceo-shouldnt-also-be-the-board-chair>.

that a corporation's decision to do more than its minimum legal duty may be indispensable to the corporation's survival.

The article makes a powerful case that, because of the danger business-model-related harms and injustices pose to company well-being, addressing regulatory inadequacy is not prohibited under recent Delaware cases such as *Marchand* and *Boeing*, but rather required by them. A banking regulation case illustrates that a corporation doing more than its minimum legal duty may even be indispensable to the survival of the global economy, without which the corporation has no marketplace in which to operate.

The article uses an Internet platform case to show how innovation can accelerate build-up of business model-related harm and injustices that can trigger company-damaging backlash by vaulting company operations—including harms and injustices operations cause—beyond the scope of existing regulations. The article concludes with a gaming law case showing why compliance has always been a dangerous corporate legal strategy and is even more dangerous today. It sketches practices a corporation can use to begin building a culture that anticipates, survives and capitalizes on the risk of regulatory inadequacy, and to lead.

II

LAW IS ALWAYS LATE: THE UNSEEN SHORTCOMING OF COMPLIANCE

Winifred Stanley, Congresswoman from Buffalo, could see the need for a law prohibiting pay discrimination against women back in June 1944. The first-term Republican had graduated at the top of her University of Buffalo School of Law class. Along with her intellectual horsepower, she brought to Washington a good eye for progress. She fought for the right of women to serve on juries, the construction of Veterans' Administration hospitals, and the establishment of a bipartisan committee to address the anticipated flood of soldiers into the post-WWII job market. She proposed House

Resolution 5056. It would add to the National Labor Relations Act a provision eliminating discrimination “against any employee, in the rate of compensation, on account of sex.”¹⁰

Yet few in the 78th Congress could see what she saw. Fellow New York Congressman James W. Wadsworth, Jr., for example, could not even see the need for women to stray into the workplace. In his view, “a woman’s place [was] in the home.” Despite the flawless sexism of this view, he presumably encountered little turbulence at home for holding it: Mrs. Wadsworth had a three-year run early in their marriage as president of the National Association Opposed to Woman’s Suffrage. Association pamphlets urged the nation to resist giving women a right to vote “because it is unwise to risk the good we already have for the evil which may occur.”¹¹ The 78th Congress did not pass H. R. 5056 into law.

By 1960, U. S. employers on average still paid women 40% less than men. Finally, the 88th Congress acknowledged that letting unequal-pay-for-equal-work practices continue depressed wages and living standards, wasted labor resources, caused labor disputes and was unfair.¹²

On June 10, 1963, upon signing the Equal Pay Act into law, President Kennedy said he was “delighted.”¹³

But if, for the years between Congresswoman Stanley’s Resolution and the 88th Congress’ epiphany, your grandmother worked at, say, a fire and life insurance company at the bend of the Merrimack River in Manchester, New Hampshire, and then retired in March 1963, the evolution of the nation’s values, practices and conventions related to gender-based wage discrimination and the

¹⁰ Equal Pay for Equal Work, H.R. 5056, 78th Cong. (1944); Associated Press, *Miss Stanley Backs Bill and Plank on Equal Pay*, N.Y. TIMES (June 20, 1944),

<https://timesmachine.nytimes.com/timesmachine/1944/06/20/87454455.html?pageNumber=22>; STANLEY, *Winifred Claire*, HIST., ART & ARCHIVES, U.S. H.R., <https://history.house.gov/People/Detail/22127> (last visited Dec. 1, 2023).

¹¹ STANLEY, *Winifred Claire*, *supra* note 10; *Memorial of Alice Wadsworth of the National Association Opposed to Woman Suffrage*, NAT’L ARCHIVES CATALOG (Dec. 11, 1917), <https://catalog.archives.gov/id/595295>; NATIONAL ASSOCIATION OPPOSED TO WOMAN SUFFRAGE, “Household Hints” Pamphlet, WIKIPEDIA, https://en.wikipedia.org/wiki/National_Association_Opposed_to_Woman_Suffrage#/media/File:Household_Hints.jpg.

¹² *The Wage Gap Over Time; In Real Dollars, Women See a Continuing Gap*, NAT’L COMM. ON PAY EQUITY, <https://www.pay-equity.org/info-time.html>; Equal Pay Act of 1963, Pub. L. 88-38 (1963), <https://www.govinfo.gov/content/pkg/STATUTE-77/pdf/STATUTE-77-Pg56.pdf>.

¹³ *Remarks on Signing Equal Pay Act of 1963*, JOHN F. KENNEDY PRESIDENTIAL LIBR. AND MUSEUM, <https://www.jfklibrary.org/asset-viewer/archives/JFKPOF/045/JFKPOF-045-001>.

coalescence of those cultural elements into a law prohibiting such discrimination probably left your grandmother less than delighted.

During her entire career wage discrimination against women was legal. Employers routinely paid women 40% less than they paid men. In all likelihood she spent her career earning 60% of the pay earned by the man doing the same job at the desk next to hers. No matter how great the law might have been for women whose careers extended beyond or started after 1964, when the Equal Pay Act took effect, the Act did not prevent or offset the harm your grandmother suffered from the company underpaying her all those years.

Many other women no doubt found themselves in the same less-than-delighted position on the day the Act became law. It's the same position occupied by people who suffer harm from cyber bullying, groundwater contamination, job discrimination, revenge porn or mortgage redlining before laws arrive to prohibit that conduct. It's the position always occupied by people harmed by conduct later outlawed. The harm those people suffer is beyond dispute, the law doesn't undo that harm, and in large part the law arrives as a response to that harm. Figuratively speaking, their harm is a fundamental ingredient in the recipe for baking the law. By definition, law is always late.¹⁴

Given the nature of law as an indispensable yet late and imperfect societal convention, the likelihood is high that, at any moment, in any industry, harm and injustice related to company business models are happening lawfully.

In some cases, the lawfulness results from the lack of a law being enacted. A healthcare provider system, for example, can use an all-or-nothing clause as leverage in contract negotiation with an insurer wanting to contract with one of the hospitals in the provider's system. The clause requires the insurer to pay the provider a high price for, say, knee replacement surgeries, at all hospitals in the provider's system even though, at the provider's hospitals in areas where great competition exists to provide knee replacement surgery, the price the provider could otherwise collect would otherwise be

¹⁴ Ruobing Su, et al., *Revenge Porn Law in Every State*, INSIDER (Oct. 30, 2019), <https://www.businessinsider.com/map-states-where-revenge-porn-banned-2019-10>.

lower. Contractually saddled with the higher cost, the insurer thus has incentive to pass it along to consumers in the form of higher insurance premiums.¹⁵

To date, lawsuits filed in response to this element of a healthcare provider's business model must rely on state and federal antitrust laws that are unsettled in their application to these clauses. Those lawsuits have thus made little headway in cutting back the use of the clauses. Meanwhile no state or federal law enacts an outright ban on those clauses, or even makes them presumptively unlawful when used by a provider with significant share of a hospital market.¹⁶ The clauses are thus bad for competition, economically harmful to consumers, and legal.

In other cases, the lawfulness results from the failure of enacted laws being enforced. In 2021 the Supreme Court signaled with its decision in the *NCAA v. Alston* case that, given the chance, it might well rule that the revenue sport business model of the nonprofit sporting association formed by the trustees of 1,100 American universities and colleges violates federal antitrust laws.¹⁷ That's the model for football and men's basketball, the two sports that generate virtually all the revenue the trustees collect from college sports. It's the model that lets schools take eight-figure annual slices from a multi-billion-dollar TV deal pie, lets bureaucrats and men who teach football and basketball earn seven- and eight-figure annual salaries, and forbids players from earning wages from schools.¹⁸

It's the model that is ok educational compromise. It's okay with men's basketball players at the nation's 65 biggest basketball universities graduating at a rate that is 34.9% lower than the rate for

¹⁵ Katherine L. Gudiksen, et al., *Preventing Anticompetitive Contracting Practices in Healthcare Markets*, THE SOURCE ON HEALTHCARE PRICE & COMPETITION (Sept. 2020), <https://sourceonhealth.wpenginepowered.com/wp-content/uploads/2020/09/Preventing-Anticompetitive-Contracting-Practices-in-Healthcare-Markets-FINAL.pdf>.

¹⁶ *Id.*

¹⁷ *NCAA v. Alston*, 141 S. Ct. 2141, 2166-68 (2021) (Kavanaugh, J., concurring) (stating three times that the compensation regime insisted upon by approximately 1,100 American universities and their sporting association raises "serious questions under the antitrust laws"). See also Overview, NCAA, <https://www.ncaa.org/sports/2021/2/16/overview.aspx>.

¹⁸ Kristi Dosh, *College TV Rights Deals Undergo Makeovers*, ESPN, (May 11, 2012), https://www.espn.com/blog/ncfnation/post/_id/61236/college-tv-rights-deals-undergo-makeovers-2; *Who Are the Highest Paid College Football Coaches?*, USA TODAY (Nov. 8, 2021, 4:31 PM), <https://www.usatoday.com/story/sports/ncaaf/2021/11/08/highest-paid-college-football-coach-salaries/6319667001>; *NCAA Men's Basketball Highest Paid Coaches for 2021-22 Season*, USA TODAY (Mar. 12, 2022, 3:30 PM), <https://www.usatoday.com/picture-gallery/sports/ncaab/2022/03/11/ncaa-mens-basketball-highest-paid-coaches-2021-22-season/9424310002/>; Dan Murphy, *NCAA President Mark Emmert Made \$2.9 Million as NCAA's Revenue Dropped More than 50%*, ESPN (July 19, 2021, 5:52 PM), https://www.espn.com/college-sports/story/_id/31844825/mark-emmert-made-29-million-ncaa-revenue-dropped-more-50-percent.

the rest of the men in the student body.¹⁹ It's okay with showcasing a simple message in prime time every autumn Saturday and every March weekend to millions of students: when billions of dollars are on the table, exploiting whoever you need to exploit to pocket the dollars is fine.

Antitrust laws prohibit agreements that unreasonably restrain trade in interstate commerce.²⁰ The 1,100 schools' longstanding policy of prohibiting each other from paying a player a wage is likely a prohibited agreement.

Additionally, state laws governing charitable corporations in California, Texas, Florida, and most everywhere else require trustees to operate their university in accordance with its institutional purpose—i.e., education. The laws empower attorneys general to force compliance with this requirement. The laws also set standards for trustee liability when duties are breached.²¹

The facts indicate that the revenue sport business is marked by such extreme workforce exploitation, educational compromise, and commercial overindulgence that, rather than being part of a university's educational purpose, the sports business has arguably become a purpose unto itself that undermines trustees' effort to fulfill their educational responsibilities. Basketball and football are gateways to experiences that can border on sublime, but operating billion-dollar leagues for these sports is not the job of higher education trustees. Educating students all the way to graduation is.

To date, however, no case has emerged that would enable the Supreme Court to rule that the business model violates antitrust law or enable a state court to rule that the business model violates charitable corporation law. The trustees' revenue sport business model is thus bad for competition, bad for higher education, economically harmful to players, and yet to be deemed unlawful.

All this being so, one can see the essential shortcoming of compliance. It's a commitment to avoid contributing to some harms and injustices, yet also a tacit endorsement of other harms and injustices. A company that contents itself with compliance may thus be electing to ignore business

¹⁹ 2018 Adjusted Graduation Gap Report: NCAA Division-I Basketball, COLL. SPORT RSCH. INST. (Aug. 30, 2018), https://www.sc.edu/study/colleges_schools/hrsm/research/centers/college_sport_research_institute/agg_reports/gap_reports/2017-18_basketball_agg_report_final_8-30-18.pdf.

²⁰ White and White, Inc. v. American Hospital Supply Corp., 723 F.2d 495, 504 (6th Cir.1983).

²¹ CAL. CORP. CODE § 5250; CAL. GOV'T CODE §§ 12588, 12591, 12598; CAL. PROB. CODE §16420(a)(2) and (3). See also, e.g., KY. REV. STAT. ANN. §§273.173(3), 273.215 (West); FLA. STAT. §§617.0801, 617.0830, 617.0834, 617.0304(2)(c); TEX. BUS. ORGS. CODE §§ 20.002, 22.221.

model-related harm and injustice. Distracted by its free legal pass, the company may be overlooking the potential for backlash that could imperil the company's future.

III

REGULATORY INADEQUACY HURTS: THE COSTS OF COMPLIANCE

A. INTERSECTION OF LAW & LEADERSHIP

In December 2010 a Pennsylvania State University assistant football coach reportedly testified before a Pennsylvania grand jury that, in 2001, he witnessed Gerald Sandusky, Assistant Professor Emeritus of Physical Education and former football team defensive coordinator, subjecting a boy to sexual assault in the showers at the University's football building. The assistant reportedly testified that he informed Joseph Paterno, the University's highly-acclaimed, highly-revered head football coach of more than 40 years, of what he saw, and later informed the University's Senior Vice President and its Athletic Director.²² Paterno reportedly told the grand jury that he informed the Athletic Director of what the assistant said he'd seen.²³ The University President and the Athletic Director reportedly testified that they discussed a report from the assistant with the University's Senior Vice President, but that nothing in the report indicated the incident was sexual in nature.²⁴

The President never reported the 2001 incident to the Pennsylvania Department of Public Welfare or to police. Nor did the Senior Vice President, the Athletic Director, the assistant or Paterno.²⁵

At the time the assistant told Paterno about this incident, 23 Pa.C.S. §6311 et seq. required that a person who, in the course of employment, suspected that a child was being abused report that

²² Sara Ganim, *Part of Jerry Sandusky Case Might Unhinge Over Date of Alleged Abuse, Penn State Lawyers Say*, THE PATRIOT-NEWS (May 8, 2012, 5:00 AM), https://www.pennlive.com/midstate/2012/05/part_of_jerry_sandusky_case_mi.html (McQueary is a former Penn State player who, in 2011, was the team's wide receivers coach. He originally testified that the incident he witnessed occurred in 2002. He subsequently amended his testimony to state that the incident occurred in 2001). *See also Grand Jury Presentment, Gerald Sandusky, Thirty-Third Statewide Investigating Grand Jury of Pennsylvania*, NPR (2011), https://legacy.npr.org/assets/news/2011/11/sandusky_presentment.pdf.

²³ *Grand Jury Presentment, Gerald Sandusky*, *supra* note 22.

²⁴ "Sandusky Grand Jury Presentment", pp.10-11, <http://www.attorneygeneral.gov/uploadedFiles/Press/Sandusky-Grand-Jury-Presentment.pdf>.

²⁵ *Id.*

suspicion to the person in charge of the institution, or that person's agent. That person or agent was then required report the suspicion to authorities.

Paterno's conduct concerning the 2001 incident was recounted in the grand jury presentment recommending the charges against Sandusky. The presentment was made public, and Sandusky was charged in November 2011. Sandusky was charged with 52 crimes involving alleged sexual assaults of ten boys between 1994 and 2008. He was eventually convicted of 45 crimes.²⁶ The grand jury did not recommend a 23 Pa.C.S. §6311 et seq. failure-to-report charge against Paterno with respect to the 2001 incident, presumably because he fulfilled his legal obligation by reporting the incident to his immediate supervisor, the Athletic Director. Within days of learning of Paterno's conduct concerning the 2001 incident, however, the University's board of trustees fired him. In explaining why, the board stated, "...[H]is decision to do his minimum legal duty and not to do more to follow up [to prevent further sexual assaults by Sandusky] constituted a failure of leadership."²⁷

Paterno's conduct in this tragedy makes the shortcomings of compliance plain. Had he done something more than what he was legally required to do in 2001, that might have included him reporting what he knew about Sandusky to the police when he saw that the President, Senior Vice President, Athletic Director and assistant coach had all failed to do so. Filing such a report might have led to Sandusky's first seven years of crimes coming to light. The revelation of those crimes might well have been an awkward, painful time for Paterno and his football operation. But he would have had a commendable story to tell; when I found out about harm, I did all I could, not just what I was legally required to do, to stop it. The act of making the police report would likely have helped lead to

²⁶Jerry Sandusky Verdict: Complete Breakdown of Charges, PATRIOT-NEWS (June 23, 2012, 2:19 AM), https://www.pennlive.com/midstate/2012/06/jerry_sandusky_verdict_complet.html; See also Partings, Pa. State Univ. (Oct. 28, 1999), https://www.dept.psu.edu/ur/archives/intercom_1999/Oct28/partings.html; Mark Viera, *A Reputation Lies in Tatters*, N.Y. TIMES (Nov. 7, 2011), https://www.nytimes.com/2011/11/08/sports/ncaafotball/jerry-sandusky-was-long-admired-at-penn-state.html?_r=0; Jerry Sandusky: From Rising Star to Most Hated Man in America, ATHLON SPORTS (Nov. 10, 2011), <https://athlonsports.com/college-football/jerry-sandusky-rising-star-most-hated-man-america>; Sara Ganim, *Jerry Sandusky, Former Penn State Football Staffer, Subject of Grand Jury Investigation*, THE PATRIOT NEWS (Mar. 31, 2011, 12:00 PM), https://www.pennlive.com/midstate/2011/03/jerry_sandusky_former_penn_sta.html; *Sandusky Grand Jury Presentment*, *supra* note 22; Joe Drape, *Sandusky Guilty of Sexual Abuse of 10 Young Boys*, N.Y. TIMES (June 23, 2012), <https://www.nytimes.com/2012/06/23/sports/ncaafotball/jerry-sandusky-convicted-of-sexually-abusing-boys.html>.

²⁷ Associated Press, *Penn State Coach Joe Paterno Was Fired for "Failure of Leadership," Board Says*, THE GUARDIAN (Mar. 12, 2012, 11:41 AM), <https://www.theguardian.com/world/2012/mar/12/penn-state-joe-paterno-board>.

a better future, i.e., one from which a predator's criminal conduct and the harm he so regularly inflicted were eliminated.

But by reporting to the Athletic Director, then failing to take any additional step to stop obvious harm, Paterno complied with the law and failed to lead into that future. Instead, his conduct helped lead to Sandusky's second seven years of crimes. Seen this way, one can see how Paterno's compliance with the law "constituted a failure of leadership." One can see how, in the trustees' view his compliance required dismissal, i.e., the forfeiture of all permission they had given him to lead.

Corporations that refuse to content themselves with compliance travel a different path than the one Paterno travelled. A healthcare provider system that discontinues the use of all-or-nothing clauses as leverage in contract negotiations with insurers, for example, can tell a story about taking a stand to bring down health care costs.

Over the past decade, premium increases for employer-sponsored insurance plans have exceeded both the rate of inflation and the rate of wage growth.²⁸ These premium increases are not surprising. On average, private insurance plans—i.e., those purchased by employers and individuals—pay more than 200% of Medicare rates for hospital inpatient and outpatient services.²⁹ For a patient's knee replacement surgery, for example, the New York Times reported in 2019 that a hospital would collect approximately \$17,000 from Medicare, whereas it would collect approximately \$37,000 from private insurance.³⁰ The high costs for insurers have resulted in higher premiums and deductibles for private insurance coverage. Even larger employers and insurers lack the market strength needed to negotiate a brake to these increases in costs paid to healthcare provider systems.³¹ The rising premium

²⁸ Cassie Lenski, *Health Benefit Cost Growth Will Accelerate to 5.6% in 2023, Mercer Survey Finds*, MERCER (Aug. 11, 2022), <https://www.mercer.us/newsroom/health-benefit-cost-growth-will-accelerate-in-2023.html>.

²⁹ Whaley, Christopher M., et al., *Prices Paid to Hospitals by Private Health Plans*, RAND CORP. (2022), https://www.rand.org/pubs/research_reports/RRA1144-1.html.

³⁰ Reed Abelson, *Hospitals Stand to Lose Billions under "Medicare for All,"* N.Y. TIMES (April 21, 2019), <https://www.nytimes.com/2019/04/21/health/medicare-for-all-hospitals.html>.

³¹ Christopher M. Whaley, et al., *Prices Paid to Hospitals by Private Health Plans*, RAND CORP. (2022), https://www.rand.org/pubs/research_reports/RRA1144-1.html; Patricia S. Keenan, et al., *Statistical Brief #543: Trends in Health Insurance at Private Employers, 2008-2021*, U.S. DEPT. OF HEALTH AND HUM. SERV. AGENCY FOR HEALTHCARE RSCH. AND QUALITY (2022), https://meps.ahrq.gov/data_files/publications/st543/stat543.shtm; Matthew D. Eisenberg, et al., *Large Self-insured Employers Lack Power to Effectively Negotiate Hospital Prices* (2021) <https://pubmed.ncbi.nlm.nih.gov/34314118/>; Nicole Rapfogel, et al., *"Employer- and Worker-Led Efforts to Lower Health Insurance Costs, Center for American Progress* (2022), <https://www.americanprogress.org/article/employer-and-worker-led-efforts-to-lower-health-insurance-costs/>.

costs strain an employer's finances, but they strain those of its employees, too. Even as these premium costs have risen, the share that employees cover has remained relatively constant over the past decade, at about 20% for single individuals and 32% for families. On top of that, as a percentage of total compensation, healthcare insurance costs covered by employers has grown, and thus take-home pay has shrunk.³²

As of late 2021, Nevada is the only state that has passed a law banning all-or-nothing clause usage.³³ Plaintiffs can try to rely on state or federal antitrust laws to prevent a healthcare system from negotiating for all-or-nothing clauses in contracts, but they face a long, expensive battle, a difficult burden of proof on the "rule of reason" test, and no guarantee of success.³⁴ Plaintiffs who settled a lawsuit against Sutter Health over all-or-nothing clause usage spent five years in litigation that produced 16.9 million pages of discovery documents, 200 depositions, 340 potential trial witnesses, 13,000 trial exhibits, \$164 million in attorney fees, a net recovery that was less than 40% of the damages plaintiffs sought, and a promise from Sutter Health to refrain from all-or-nothing clause usage that only lasts for ten years.³⁵

³² U.S. Bureau of Labor Statistics, *National Compensation Survey: Employee Benefits in the United States, March 2010*, U.S. DEPT. OF LABOR (2010), <https://www.bls.gov/ncs/ebs/benefits/2010/ebbl0046.pdf>; U.S. Bureau of Labor Statistics, *National Compensation Survey: Employee Benefits in the United States, March 2022*, U.S. DEPT. OF LABOR (2010), <https://www.bls.gov/ncs/ebs/benefits/2022/home.htm>; Matthew Rae, et al., *Tracking the Rise in Premium Contributions and Cost-sharing for Families with Large Employer Coverage*, PETERSON-KFF HEALTH SYSTEM TRACKER (August 14, 2019), <https://www.healthsystemtracker.org/brief/tracking-the-rise-in-premium-contributions-and-cost-sharing-for-families-with-large-employer-coverage/>; See *Health Insurance Costs Are Squeezing Workers and Employers*, CENTER FOR AMERICAN PROGRESS (Nov. 29, 2022), <https://www.americanprogress.org/article/health-insurance-costs-are-squeezing-workers-and-employers/#:~:text=The%20annual%20premium%20for%20individual,average%20from%202010%20to%202022>.

³³ Nev. Rev. Stat § 598A.440(1)(c) (2021), <https://www.leg.state.nv.us/nrs/NRS-598A.html#NRS598ASec060>; See Katherin Gudiksen, et al., *Mitigating the Price Impacts of Health Care Provider Consolidation*, THE MILBANK MEMORIAL FUND (Sept. 23, 2021), <https://www.milbank.org/publications/mitigating-the-price-impacts-of-health-care-provider-consolidation/#footnote-66>; Katherin L. Gudiksen, et al., *Preventing Anticompetitive Contracting Practices in Healthcare Markets*, UNIV. OF CAL. HASTINGS COLL. OF L. (Sept. 2020), <https://sourceonhealth.wpenginepowered.com/wp-content/uploads/2020/09/Preventing-Anticompetitive-Contracting-Practices-in-Healthcare-Markets-FINAL.pdf>.

³⁴ *UFCW & Employers Benefit Trust v. Sutter Health*, Case No. CGC 14-538451, 2014 Cal. Super. LEXIS 7435 (June 2, 2014), See settlement summarized at <https://www.sutterhealthlawsuit.com>; See Motion for Preliminary Settlement Approval at <https://www.sutterhealthlawsuit.com/Content/Documents/Motion%20for%20Preliminary%20Settlement%20Approval.pdf>; See also Gudiksen, *supra* note 33; *United States v. Blue Cross Blue Shield of Michigan*, 809 F. Supp. 2d 665, 671 (E. D. Mich. 2011), <https://casetext.com/case/united-states-v-blue-cross-blue-shield-of-michigan/>.

³⁵ *UFCW & Employers Benefit Trust*, 2014 Cal. Super. LEXIS 7435; See Motion for Preliminary Settlement Approval, <https://www.sutterhealthlawsuit.com/Content/Documents/Motion%20for%20Preliminary%20Settlement%20Approval.pdf>.

The story a healthcare provider system can tell about stepping beyond compliance with respect to all-or-nothing clause usage is an asset. It can be told as a means of building reputational capital aka, in accounting terms, goodwill. It can't be sold at a stand on the street, but it can be turned into customer loyalty and employee satisfaction. Neither of those items can be bought on the street or online, but both can be of immense value to an organization.

As one industry commentator notes, the way Americans obtain health insurance—i.e., through the combination of private insurance, employer-sponsored insurance, insurer regulation, subsidies for the uninsured, and the Affordable Care Act—is, most charitably, a “patchwork nonsystem.”³⁶ A healthcare provider system taking a step to brake the cost spiral of this patchwork nonsystem is doing more than its minimum legal duty and could properly cite that step as evidence of leadership.

By contrast, a healthcare provider system that continues to rely on all-or-nothing clauses as leverage in contract negotiations with insurers doesn't have much of a story to tell on this point. Only a financial version of a go-along-to-get-along tale. They travel Paterno's path. They contribute to the likelihood that harm will continue, in this case in the form of insurers passing along higher costs to consumers. They are in full compliance with laws on all-or-nothing clauses in virtually every state. Until a set of plaintiffs musters the fortitude and money to sue them under antitrust law and win, they are not deemed to be doing anything unlawful under those laws. They can create a web site post like the one Sutter Health has: “Sutter Health leads the transformation of healthcare to achieve the highest levels of quality, access and affordability.”³⁷ But those are just words. The company's tacit endorsement of harm makes the claim to leadership ring hollow.

Similarly, as university trustees continue to operate their revenue sport business model, they do not have much of a story to tell, either. They have taken full advantage of the laws that to date have enabled them to exploit players for billions while compromising education for so many of them. They have fought side by side with their fellow trustees to keep the law from expanding their duties. They appealed the initial decision in the *Alston* case.³⁸ They appealed the initial decision in the Northwestern

³⁶ Jonathan Oberlander, *Lessons from the Long and Winding Road to Medicare for All*, AMERICAN JOURNAL FOR PUBLIC HEALTH (Nov. 2019), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6775897/>.

³⁷ *Community Benefit and Our Mission*, SUTTER HEALTH, <https://www.sutterhealth.org/community-benefit/mission> (last visited Nov. 23, 2023).

³⁸ *NCAA v. Alston*, 141 S. Ct. 2141 (2021).

football team's effort to form a union.³⁹ They asked Congress for an exemption from antitrust laws and made plans to ask for a law that would assure that football and men's basketball players would never be deemed university employees.⁴⁰ They have refused to pay their workforce or allow their workforce to negotiate for compensation.⁴¹ They thus have made policy, with respect to their revenue sport business, on a commitment to prohibit themselves from doing more than their minimum legal duty.

Duke University claims to aspire to "...[attain] and [maintain] a place of real leadership in the educational world"⁴² USC claims that, "In our surrounding neighborhoods and around the globe, USC provides public leadership and public service."⁴³ The University of Florida claims that it "will be a premier university that the state, nation and world will look to for leadership."⁴⁴

Yet notwithstanding this polished, circumlocutory politesse about leadership, university trustees, with respect to their revenue sport business, continue their long-standing policy of doing their minimum legal duty and nothing more. That policy, while it has yet to be deemed unlawful, is not leadership in the field of education. It's a policy that makes higher education a corrosive shell of the societal force that it could be. A recent survey indicates seven of ten adults 18-29 believe the players

³⁹ Ben Strauss, *NLRB Rejects Northwestern Football Players' Union Bid*, N.Y. TIMES (Aug. 17, 2015), <https://www.nytimes.com/2015/08/18/sports/ncaafotball/nlr-says-northwestern-football-players-cannot-unionize.html>.

⁴⁰ NCAA Board of Governors, *Federal and State Legislation Working Group Final Report and Recommendations*, NCAA (Apr. 17, 2020), https://ncaaorg.s3.amazonaws.com/committees/ncaa/wrkgtps/fslwg/Apr2020FSLWG_Report.pdf; Gillian R. Brassil, *Senators Say NCAA Needs Broad Reform*, N.Y. TIMES (July 23, 2020), <https://www.nytimes.com/2020/07/23/sports/ncaa-NIL-rights.html>.

⁴¹ Hearing Before the U.S. Sen. Judiciary Committee, 116th Cong. (2020) (statement of Mark Emmert, President of NCAA) <https://www.judiciary.senate.gov/imo/media/doc/Emmert%20Testimony.pdf>; *See also A Level Playing Field: College Athletes' Rights to Their Names, Image and Likeness*, Hearing Before House Committee on Energy & Commerce, U.S. H.R. (Sep. 30, 2021), <https://energycommerce.house.gov/committee-activity/hearings/hearing-on-a-level-playing-field-college-athletes-rights-to-their-name>.

⁴² James B. Duke et. al., *The Duke Endowment Indenture of Trust 10*, <https://www.dukeendowment.org/uploads/resource-library/Duke-Endowmentnt-Indenture-of-Trust.pdf> (Feb. 1, 2019).

⁴³ *Mission Statement: The Role and Mission of the University of Southern California*, UNIV. OF S. CAL. BD. OF TR. (Feb. 1993), <https://www.usc.edu/policies/mission-statement/#:~:text=The%20Role%20and%20Mission%20of,the%20human%20mind%20and%20spirit>.

⁴⁴ *University of Florida's Core Values*, UNIV. OF FLA., <https://www.ufl.edu/about/core-values/> (last visited Nov. 20, 2023).

should be paid.⁴⁵ When coupled with obvious but lawful business-model-related harm, claims about leadership are only cliché, and the public knows it.

B. DELAWARE LAW & COMPANY SURVIVAL

At first, the industry's tale of regulatory easing did not seem to be taking a dark turn when lawmakers added the chapter that they did in 2003. After all, this was not a new tale. Lawmakers composed the tale's first chapter back in the middle of the previous century. The 2003 chapter merely delegated to the industry's leading companies' additional responsibility in certifying their products' safety. This responsibility had been growing for more than 50 years. Little did lawmakers know that, for one company and its customers, the 2003 chapter's ending would be deadly.⁴⁶

Justification for the 2003 chapter reflected the same themes that had been used to justify previous decades of regulatory easing. Public demand for industry products had sloped upward with little interruption. The agency regulating the industry possessed limited resources. Industry giants possessed greater technical expertise than the agency. Lawmakers had always justified delegating elements of safety certification to the industry's leading companies by claiming the delegation process increased efficiency: the regulatory agency could concentrate its limited resources on the most critical safety issues, and the companies could deliver safe products to customers without unwarranted regulatory delay.

The 2003 law made one change of note. Historically, the agency had selected company employees to whom the agency's safety certification tasks would be delegated. Under the 2003 law, the companies chose which employees would work on those delegated agency tasks, with the agency retaining the right to veto any of the choices. By 2013, employees paid by industry companies and

⁴⁵ *Marist Poll with the Center for Sports Communication at Marist College of 1,264 National Adults*, MARISTPOLL (Feb. 2022), https://maristpoll.marist.edu/wp-content/uploads/2022/03/Marist-Poll_Center-for-Sports-Communication_USA-NOS-and-Banners_202203031619.pdf.

⁴⁶ *See* Vision 100—Century of Aviation Reauthorization Act, Pub. L. No. 108-176, 117 Stat. (Dec. 12, 2003) (codified as amended at 49 U.S.C. § 40101), <https://www.govinfo.gov/content/pkg/PLAW-108publ176/pdf/PLAW-108publ176.pdf>; Establishment of Organization Designation Authorization Program, FAA Final Rule, 70 Fed. Reg. 59932 (Oct. 13, 2005), <https://www.federalregister.gov/documents/2005/10/13/05-20470/establishment-of-organization-designation-authorization-program>.

selected by those companies reportedly performed more than 90% of the agency's safety certification activities.⁴⁷

One 2011 agency report pointed out to lawmakers that this arrangement increased the possibility that a company would staff the agency's safety certification work with unqualified individuals or individuals with a record of taking positions on safety matters that conflicted with the agency's directives. Another report pointed out in 2013 that the agency's reliance on this arrangement was adding to the expertise gap between company staffs and agency staff, thereby increasing the possibility that agency staff would not keep pace with industry changes and would struggle to understand new products whose safety needed to be evaluated. These reports had no apparent impact on the law.⁴⁸

Starting in 2014 the industry's major trade association lobbied lawmakers for even further delegation of agency tasks. Without further delegation, the association contended, safety certification inefficiencies would doom American companies in their race with foreign competitors for industry domination. The association enjoyed unbridled opportunity to lobby Congress. By contrast federal law prohibited the agency from lobbying Congress. Rather than addressing shortcomings of existing law, lawmakers began considering a new round of regulatory delegation.⁴⁹

One of the companies leading the push for lawmakers to ease regulations further was at the same time seeking the agency's approval for a new version of its flagship product. The approval process illustrated just how hard it was for agency to make objective, influence-free product assessments.

At one point in the product's approval process, agency personnel reportedly stated their belief that, without adjustments, the product would fail in a way that endangered users' lives. Company employees, by contrast, maintained that such a failure was unlikely, and that adjustments would cause

⁴⁷ U.S. GOV'T ACCOUNTABILITY OFF., SENATE COMM. ON COM., SCIENCE, AND TRANSP., GAO-13-442T, FAA EFFORTS HAVE IMPROVED SAFETY, BUT CHALLENGES REMAIN IN KEY AREAS (Apr. 16, 2013), <https://www.gao.gov/assets/660/653801.pdf>.

⁴⁸ See U.S. DEP'T OF TRANSP., OFF. OF INSPECTOR GEN., AUDIT REP., AV-2011-136 (June 29, 2011), [https://www.oig.dot.gov/sites/default/files/FAA ODA 6-29-11.pdf](https://www.oig.dot.gov/sites/default/files/FAA%20ODA%206-29-11.pdf); U.S. GOV'T ACCOUNTABILITY OFF., *supra* note 47.

⁴⁹ Natalie Kitroeff & David Gelles, *Before Deadly Crashes, Boeing Pushed for Law that Undercut Oversight*, N.Y. TIMES (Jan. 6, 2020), <https://www.nytimes.com/2019/10/27/business/boeing-737-max-crashes.html>.

production delays. Senior agency officials sided with the company, citing the negative impact a redesign would have on company's production schedule and budget.⁵⁰

At another point in the product's approval process, two senior agency officials overseeing the company's work departed, apparently frustrated by the company's level of influence over the safety certification process. The agency appointed inexperienced personnel to replace them. The new personnel reportedly accepted the company's assessment of the product's safety without comment. The company subsequently modified a key component of the product, but while the new agency personnel learned about the modification, reports indicate that they lacked the experience to recognize the safety risks the modification posed, and that the company never provided them with an updated safety assessment. When the company asked to remove all references to the modification from the operating manual, the new agency personnel reportedly agreed. Manuals and training materials for the new product thereafter lacked information about the modification's impact on product operation.⁵¹

Early in 2017, the agency approved the product. Within two months, customers around the globe were using the product. The public would later discover that, during the last phases of the safety certification process, company employees were sending emails that referred to regulators as "dogs watching TV," and referred to the product as "a joke."⁵²

Lawmakers wrote the latest chapter in the industry's tale of regulatory easing in 2018. Previously, the agency could withhold or revoke delegation of safety certification tasks. The new law, by contrast, required the agency to delegate virtually all responsibility for certifying a product's safety, and to take back any of that responsibility only after instituting a potentially lengthy investigation.⁵³

⁵⁰ Natalie Kitroeff, et al., *The Roots of Boeing's 737 Max Crisis: A Regulator Relaxes Its Oversight*, N.Y. TIMES (July 27, 2019), <https://www.nytimes.com/2019/07/27/business/boeing-737-max-faa.html>; See e.g., https://www.faa.gov/about/office_org/headquarters_offices/avs/offices/air/media/air800_bio.pdf (biography of Jeff Duven, System Oversight Division Director, FAA, who was responsible for delegation programs and who, before joining the FAA, was a propulsion systems engineer at Boeing).

⁵¹ Kitroeff, *supra* note 50; *In re Boeing Co. Derivative Litig.*, No. CV 2019-0907 (MTZ), 2021 WL 4059934, at *27 (Del. Ch. Sept. 7, 2021).

⁵² House Comm. on Transp. and Infrastructure, Preliminary Investigative Findings, The Boeing 737 MAX Aircraft (Mar. 2020), https://www.govinfo.gov/content/pkg/GOVPUB-Y4_T68_2-fb0f3812fefe3515ebcf3f4170fce64b/pdf/GOVPUB-Y4_T68_2-fb0f3812fefe3515ebcf3f4170fce64b.pdf; David Gelles, "I Honestly Don't Trust Many People at Boeing": A Broken Culture Exposed, N.Y. TIMES (Jan. 10, 2020), <https://www.nytimes.com/2020/01/10/business/boeing-737-employees-messages.html>.

⁵³ FAA Reauthorization Act of 2018, 49 U.S.C. § 40101, Pub. L. 115-254 (2018).

The new law also created a committee charged with setting agency goals, ensuring that the agency meets those goals, and making recommendations about the compensation of agency employees. As of the summer of 2019, the committee was composed of two union officials, two agency officials, and 16 industry executives.⁵⁴

24 days after passage of the 2018 law, the company's product was reportedly the cause of the deaths of 189 people off the coast of Indonesia. In the wake of that product failure, agency officials met with company officials to find out why the product failed. As company employees explained the product, agency officials reportedly realized that they did not understand the safety risks the product posed, in part because of the inexperience of the two agency personnel who took over the product's safety certification process, and in part because the company never told the agency about those safety risks.⁵⁵ Subsequent investigation revealed that the product's operators searched the product handbook as the tragedy unfolded, looking for reasons why the product malfunctions were taking place, but they found no reference in the handbook to the product modification later identified as the cause of the tragedy.⁵⁶

Less than five months after the product's first failure, the company's product was reportedly the cause of the deaths of 157 people in Ethiopia.⁵⁷ Within 72 hours, the product was removed from the marketplace worldwide, and company's accumulation of losses from these two tragedies began to accelerate. The product remained removed from the market worldwide for 20 months. According to one report, the losses related to the product's defective performance—including production cost increases, customer rebates, canceled orders, and lost sales—may make it the most expensive corporate disaster in history, vaulting it past the Volkswagen's emissions cheating scandal (\$38 billion) and BP's Deepwater Horizon explosion and oil spill (\$68 billion).⁵⁸

⁵⁴ *Safety Oversight and Certification Advisory Committee Meeting Agenda*, FAA (Nov. 13, 2019), [https://www.faa.gov/regulations_policies/rulemaking/committees/documents/media/SOCAC Meeting Package \(11-13-19\).pdf](https://www.faa.gov/regulations_policies/rulemaking/committees/documents/media/SOCAC_Meeting_Package_(11-13-19).pdf); Press Release, U.S. Dept. of Transp., *U.S. Secretary of Transportation Elaine L. Chao Announces Appointees to Safety Oversight and Certification Advisory Committee* (Aug. 22, 2019), <https://www.transportation.gov/briefing-room/us-secretary-transportation-elaine-l-chao-announces-appointees-safety-oversight-and-0>.

⁵⁵ ⁵⁵ Kitroeff, Natalie, et al., *The Roots of Boeing's 737 Max Crisis*, <https://www.nytimes.com/2019/07/27/business/boeing-737-max-faa.html>.

⁵⁶ *In re Boeing Co.*, 2021 WL 4059934, at *32.

⁵⁷ Simon Marks & Abdi Latif Dahir, *Ethiopian Report on 737 Max Crash Blames Boeing*, N.Y. TIMES (Mar. 9, 2020), <https://www.nytimes.com/2020/03/09/world/africa/ethiopia-crash-boeing.html>.

⁵⁸ Mika Grondahl, et al., *In 12 Minutes, Everything Went Wrong*, N.Y. TIMES (Dec. 26, 2018), <https://www.nytimes.com/interactive/2018/12/26/world/asia/lion-air-crash-12-minutes.html>; Hannah Beech, *Indonesia*

* * *

Boeing, its directors and its officers are paying a steep price for their zealous pursuit of regulatory easing, preoccupation with compliance, and disregard of regulatory inadequacy.

The company's top-disaster-in-history losses include a \$237 million settlement of a claim brought by Boeing shareholders against the board for breach of fiduciary duties in relation to safety matters and the two crashes.⁵⁹ Not surprisingly, the case settled after the court denied the defendants' motion to dismiss.

The court found that the company lacked any formal, board-level process to oversee airplane safety. None of the board committees were specifically tasked with overseeing airplane safety. No committee charter mentioned airplane safety. The Audit Committee was tasked with handling risk generally, but while it reported to the Board on company compliance with legal and regulatory requirements, it did not take on airplane safety specifically. It focused primarily on financial risks such as production rate readiness and supplier management rate readiness.⁶⁰

The court applied the test set forth in *Marchand v. Barnhill*: to avoid liability for breach of fiduciary duty with respect to "essential and mission-critical regulatory compliance risk,"⁶¹ the board must implement a reporting or information system or controls, and, having implemented such a system or controls, must monitor and oversee its operation as a means of informing them of risks and problems requiring their attention.⁶²

Plane Crash Leaves Experts Puzzled, N.Y. TIMES (Oct. 30, 2018), <https://www.nytimes.com/2018/10/30/world/asia/indonesia-plane-crash-lion-air.html>; David Gelles, *Boeing Expects 737 Max Costs Will Surpass \$18 Billion*, N.Y. TIMES (Jan. 29, 2020), <https://www.nytimes.com/2020/01/29/business/boeing-737-max-costs.html>; *In re Boeing*, 2021 WL 4059934, at *58; Chris Isidore, *Boeing's 737 Max Debacle Could Be the Most Expensive Corporate Blunder Ever*, CNN BUSINESS (Nov. 17, 2020), <https://www.cnn.com/2020/11/17/business/boeing-737-max-grounding-cost/index.html>.

⁵⁹ Matthew B. Goeller et al., *Approval of US \$237.5 Million Settlement in Boeing Derivative Action Demonstrates Impact of Section 220 Demand in ESG Litigation*, NAT'L. L. REV. (Mar. 24, 2022), <https://www.natlawreview.com/article/approval-us-2375-million-settlement-boeing-derivative-action-demonstrates-impact>; See *The Boeing Company Shareholder Derivative Litigation*, LIEFF CABRASER HEIMANN & BERNSTEIN <https://www.lieffcabraser.com/securities/boeing/> (last visited Nov. 21, 2023), (citing related motion to dismiss order filed in 2021).

⁶⁰ *In re Boeing*, 2021 WL 4059934, at *11-14.

⁶¹ *Id.* at *71 (citing *Marchand v. Barnhill*, 212 A. 3d 805, 824 (2019)).

⁶² *Marchand*, 212 A. 3d at 821; *In re Boeing*, 2021 WL 4059934, at *67.

The court ruled that, because the board had no committee charged with monitoring airplane safety, and the board did not monitor, discuss or address airplane safety on a regular basis, the board had failed to the first prong of the Marchand test and was liable for breach of fiduciary duty regarding the mission critical risk issue of airplane safety.⁶³

The court noted that directors' oversight function must be "rigorously exercised,"⁶⁴ and that leaving compliance with mission critical safety mandates to management's discretion, rather than implementing and overseeing a more structured compliance system, did not qualify as a good faith effort to implement a reasonable system of monitoring and reporting.⁶⁵

[U]nder *Marchand*, minimal regulatory compliance and oversight do not equate to a *per se* indicator of a reasonable reporting system...As *Marchand* made plain, the fact that the company's product facially satisfies regulatory requirements does not mean that the board has fulfilled its oversight obligations to prevent corporate trauma.⁶⁶

Boeing' losses also include a \$2.5 billion deferred prosecution agreement with the Justice Department. That agreement calls for the company to pay \$200+ million in fines, \$500 million into a fund to compensate victims' families, and \$1.7 billion to customers who purchased the defective product.

The deferred prosecution agreement also states that, assuming the company commits no new transgressions for three years, the company avoids a trial on felony fraud charges for deceiving the agency regulators that approved the product.⁶⁷ Families for some of the victims have filed a federal court challenge to the settlement agreement, claiming that the Justice Department violated the federal Crime Victims Rights Act by not consulting with them before entering into this deferred prosecution agreement, which they say amounts to a plea deal with criminal defendants.⁶⁸ Their challenge remains

⁶³ *In re Boeing*, 2021 WL 4059934, at *74-86.

⁶⁴ *In re Boeing*, at *71 (citing *Marchand*, 212 A. 3d 805 at 824).

⁶⁵ *Id.* at *71-74.

⁶⁶ *Id.* at *79-80.

⁶⁷ See Yvonne Abraham, *A Sheffield Family Is Among Those Trying to Hold Boeing Accountable for the 737 Max Crash that Killed Their Daughter*, BOSTON GLOBE (Feb. 4, 2023), <https://www.bostonglobe.com/2023/02/04/metro/shining-light-dark-deeds/>; *United States v. Boeing Co.*, 617 F. Supp. 3d 502, 506 (N.D. Tex. 2022); Niraj Chokshi & Michael J. Schmit, *Boeing Reaches \$2.5 Billion Settlement with U.S. over 737 Max*, N.Y. TIMES (Oct. 15, 2021), <https://www.nytimes.com/2021/01/07/business/boeing-settlement-justice-department.html>.

⁶⁸ See David Koenig, *Boeing Pleads Not Guilty in Case over Deadly Max Crashes*, ASSOCIATED PRESS (Jan. 26, 2023), <https://apnews.com/article/politics-us-department-of-justice-texas-business-fraud-57db69f33fda9f62785e1fe5d3b2f538>; *Deferred Prosecution Agreement, United States v. The Boeing Company*, U.S. DEP'T OF JUSTICE (Aug. 11, 2023),

pending, could expose company directors to criminal prosecution, and could result in the company being convicted of the felony conspiracy charge.⁶⁹

Could a felony conviction for the company trigger a sequence of events that cause it to fold? That's what happened to Arthur Andersen in the wake of its felony conviction for obstruction of justice in connection with the Enron scandal.⁷⁰ Boeing is less likely to fold in the wake of such a conviction. It employs approximately 140,000 people.⁷¹ It generated \$100 billion in revenue and \$12 billion in profit in 2018.⁷² It would seem that, even if a lot of employees left and revenue dropped precipitously, the company might lose its best and brightest, but it could survive. The final chapter on Boeing's role in these tragedies and the backlash arising from it, however, has yet to be written.

Meanwhile, most companies do not have Boeing's mass, in terms of workforce or revenue, so the case stands as a cautionary tale about how compliance can imperil company survival. It also stands as an indication of the stance Delaware case law is taking on regulatory inadequacy.

One can argue that Boeing complied with regulatory requirements—after all, the plane was approved. One can also note the role Boeing played in watering down the standards with which they were required to comply. But bottom line, none of these points about compliance mattered to the court, under *Marchand*. The court's ruling indicates that Boeing's obligations extend beyond the fine print of whatever FAA regulations might require at any moment. Those obligations extend all the way to making sure Boeing planes do not fall out of the sky.

In finding company responsibility for “mission-critical regulatory compliance risk” when it operates in a “highly regulated industry,”⁷³ the court signals that there are indeed circumstances when a company is responsible for regulatory inadequacy. Just because a particular risk is not identified and

<https://www.justice.gov/criminal-fraud/case/united-states-v-boeing-company> (summarizing the agreement and case status).

⁶⁹ Madlin Mekelburg et al., *Boeing-DOJ “Sweetheart Deal” Decried by Victim’s Wife*, BLOOMBERG LAW (Jan. 26, 2023), <https://news.bloomberglaw.com/esg/boeing-pleads-not-guilty-in-fraud-case-over-737-max-crashes>; Michael Laris, *Judge Rules DOJ Violated Rights of Boeing Max Victims in Prosecution Deal*, WASH. POST (Oct. 21, 2022), <https://www.washingtonpost.com/transportation/2022/10/21/boeing-max-justice-department/>.

⁷⁰ Kurt Eichenwald, *Andersen Guilty in Effort to Block Inquiry on Enron*, N.Y. TIMES (June 16, 2022), <https://www.nytimes.com/2002/06/16/business/andersen-guilty-in-effort-to-block-inquiry-on-enron.html>.

⁷¹ *Boeing in Brief*, BOEING, <https://www.boeing.com/company/general-info/> (last visited Nov. 21, 2023).

⁷² *Boeing Reports Record 2018 Results and Provides 2019 Guidance*, BOEING INVESTOR REPORTS, <https://investors.boeing.com/investors/overview/default.aspx>.

⁷³ *In re Boeing*, 2021 WL 4059934, at *79.

addressed in regulations does not mean the company is never responsible for it.⁷⁴ Given the speed with which the marketplace is becoming more complex, and the speed with which backlash rooted in business-model-related harms and injustices can now be unleashed, how many risks that seem peripheral today will be mission critical, and thus the responsibility of the company under *Marchand* and *Boeing*, by tomorrow?

The greatest regulatory risk an organization confronts thus may not be high compliance hurdles, but rather the possibility that, perhaps in the name of efficiency or American competitiveness, or perhaps just because of technical expertise gaps, lawmakers haven't legislated values, practices and conventions that will keep companies focused on achieving commercially inventive, minimally harmful and societally valued work. One can argue that, absent such legislation and supporting regulation, companies must create a culture that, when combined with whatever law exists, insists on values, practices and conventions that will facilitate the achievement of that commercially inventive, minimally harmful and societally valued work. Without that culture, companies would seem to flirt with significant consequences, given the apparent direction of Delaware law, and up their odds for a dismal and possibly tragic end.

C. COMPLIANCE & ECONOMIC LIQUEFACTION

The jolt announced itself on a hot, still afternoon by rolling a bottle of wine off the top of the refrigerator and knocking an elderly couple to the kitchen floor. The flat shook rumbled and creaked for fifteen seconds. Outside, the jolt killed dozens. It buckled sidewalks, collapsed buildings, started fires and knocked out water, electricity and phone service. At 6.9 on the Richter scale, its violence was enough to collapse a stretch of interstate freeway and a segment of a ten-lane suspension bridge.⁷⁵

Half a block from the flat, puddles of thick gray ooze erupted onto a long green. The eruptions of ooze signaled that the jolt had shaken the soil with such violence that the soil lost its strength and

⁷⁴ Note that, under *Air Products Inc. v. Airgas*, 16 A. 3d 48 (Del. Ch. 2011), a company is arguably not exposed to liability for sacrificing short-term profit for long-term benefit.

⁷⁵ Robin Lippincott, *IN SHORT: Nonfiction; A Glimpse Into the Abyss*, N.Y. TIMES (Dec. 24, 1989), <https://www.nytimes.com/1989/12/24/books/in-short-nonfiction-a-glimpse-into-the-abyss.html>; *San Francisco - Oakland Bay Bridge*, METROPOLITAN TRANSPORTATION COMMISSION (Aug. 30, 2023), <https://mtc.ca.gov/about-mtc/what-mtc/bay-area-toll-authority/san-francisco-oakland-bay-bridge>.

behaved more like a liquid than a solid. In the face of shaking so violent, liquefaction happens. It renders loosely structured portions of soil unable to support whatever civilization has built on it.⁷⁶

* * *

At the outset of the millennium, lawmakers saw no value in imposing more than a loosely structured set of regulations on the mortgage industry. In particular they saw no value in prohibiting commercial banks, investment houses and insurers from engaging in all stages of the mortgage business—i.e., originating an application, assessing an applicant’s risk, bundling mortgages and their payment streams into a security, selling the security, and collecting the borrowers’ payments on behalf of the security’s owner. No such prohibition burdened foreign financial institutions. Said one senator who sponsored the law enabling this free-for-all—

We have a new century coming, and we have an opportunity to dominate that century the same way we dominated this century. [The law to date, instituted] in the midst of the Great Depression, came at a time when the thinking was that government was the answer. In this era of economic prosperity, we have decided that freedom is the answer.⁷⁷

Another senator claimed that lawmakers had little choice other than to legalize this all-access pass to the mortgage industry:

If we don’t pass this bill, we could find London or Frankfurt or years down the road Shanghai becoming the financial capital of the world. There are many reasons for this bill, but first and foremost is to ensure that U.S. financial firms remain competitive.

Had lawmakers limited how broadly companies could participate in the mortgage business, the companies’ natural self-interest as capitalists might well have forced them to perform high quality work, so that their customers—i.e., those working the other stages of the business—would not refuse to do business with them. This might have increased the likelihood of an honest, functioning mortgage

⁷⁶ *Why Does Liquefaction Occur?*, UNIV. OF WASH., <https://depts.washington.edu/liquefy/html/why/why1.html> (last updated Jan. 27, 2000).

⁷⁷ Neil Fligstein et al., *The Transformation of Mortgage Finance and the Industrial Roots of the Mortgage Meltdown*, INSTITUTE FOR RSCH. ON LAB. AND EMP. (Oct. 2012), <https://www.irle.berkeley.edu/files/2012/The-Transformation-of-Mortgage-Finance-and-the-Industrial-Roots-of-the-Mortgage-Meltdown.pdf>; Erin Coghlan et al., *What Really Caused the Great Recession*, INSTITUTE FOR RSCH. ON LABOR AND EMP. (Sept. 19, 2018), <https://irle.berkeley.edu/what-really-caused-the-great-recession/#note2>; Stephen Labaton, *Congress Passes Wide-ranging Bill Easing Bank Laws*, N.Y. TIMES (Nov. 5, 1999), <https://www.nytimes.com/1999/11/05/business/congress-passes-wide-ranging-bill-easing-bank-laws.html>.

market, but in the name of making American companies competitive, that's not the path the lawmakers chose.

Enamored of the fees to be earned at each stage of the mortgage business, many institutions jumped into all stages of the business. Bear Stearns, Lehman Brothers, Merrill Lynch and Morgan Stanley, for example, began setting up loans to mortgage customers, bundling the mortgages into securities, and collecting the payments on the loans. In some cases, they used borrowed money to make the loans, then bundled them into mortgage-backed securities and held the securities in their own accounts. In others they sold the securities to investors, then serviced the loans on investors' behalf. And in still other cases, they bought mortgages made by others, bundled them into securities then sold them.⁷⁸

Within a few years, the industry had sold mortgages to most of the house buyers and house refinancers who could repay a loan. Eager to preserve the stream of fees being earned at each stage of the mortgage business, institutions began making mortgages to borrowers who the institutions knew possessed little ability to repay them. This cash flow preservation strategy required institutions to deceive the unqualified borrowers about the risks of taking out a loan, and to deceive investors in the securities created with those mortgages about the likelihood those mortgages would ever be paid back.⁷⁹

By 2008 mortgage defaults accelerated, the value of houses and mortgage-backed securities crumbled, the nation's fourth-largest investment bank declared a bankruptcy that took 14 years to conclude, and the U. S. financial system needed a \$700 billion government bailout to avoid collapse.⁸⁰

⁷⁸ Erin Coghlan et al., *What Really Caused the Great Recession*, INSTITUTE FOR RSCH. ON LABOR AND EMP. (Sept. 19, 2018), <https://irle.berkeley.edu/what-really-caused-the-great-recession/>; Michael Lewis, *Betting on the Blind Side*, VANITY FAIR (Mar. 1, 2010), <https://www.vanityfair.com/news/2010/04/wall-street-excerpt-201004>.

⁷⁹ David Ingram et al., *U.S. Accuses Bank of America of Mortgage-backed Securities Fraud*, REUTERS (Aug. 6, 2013), <https://www.reuters.com/article/us-bofa-justice/u-s-accuses-bank-of-america-of-mortgage-backed-securities-fraud-idUSBRE9750ZU20130806>; Press Release, Bank of America to Pay \$16.65 Billion in Historic Justice Department Settlement for Financial Fraud Leading Up to and During the Financial Crisis, U.S. Dep't of Justice (Aug. 21, 2014), <https://www.justice.gov/opa/pr/bank-america-pay-1665-billion-historic-justice-department-settlement-financial-fraud-leading>; Binyamin Applebaum, *How Mortgage Fraud Made the Financial Crisis Worse*, N.Y. TIMES (Feb. 12, 2015), <https://www.nytimes.com/2015/02/13/upshot/how-mortgage-fraud-made-the-financial-crisis-worse.html>; Michael Lewis, *Betting on the Blind Side*, VANITY FAIR (Mar. 2010), <https://www.vanityfair.com/news/2010/04/wall-street-excerpt-201004>.

⁸⁰ See *Delinquency Rate on Single-Family Residential Mortgages*, FRED: ST. LOUIS FED, <https://fred.stlouisfed.org/series/DRSFRMACBS> (last visited Nov. 21, 2023); *Median Sales Price of Houses Sold for the United States*, FRED: ST. LOUIS FED, <https://fred.stlouisfed.org/series/MSPUS> (last visited Nov. 21, 2023); *Credit*

In sum, lawmakers misjudged what set of legislated values, practices, and conventions—aka laws—was needed to enable the mortgage industry to function.

Institutions were of course better positioned than lawmakers to understand what the industry needed to function, but they did not act with the values, practices and conventions that supported a functioning industry. Rather, their actions shook the mortgage market so violently that, given that market's importance to the economy, even the legislated values, practices and conventions aka laws could not support the economy civilization had built upon them.

So, but for the government bailout, Citigroup (\$45 billion), Bank of America (\$45 billion), JP Morgan Chase (\$25 billion), Goldman Sachs (\$10 billion), Morgan Stanley (\$10 billion) *et al.*, would in effect have engineered, along with their own demise, the demise of the entire economy.⁸¹

Such can be the power of the values, practices, and conventions a company chooses to implement. Liquefaction happens, and the banking industry is not the only industry that can trigger it.

Burning fossil fuels for electricity, heat and transportation causes emissions known as greenhouse gases—i.e., gases that, according to the Environmental Protection Agency, trap heat inside the Earth's atmosphere and make the planet warmer. Recent reporting from National Oceanic and Atmospheric Administration indicates the planet is setting records for heat. At least in part because heat compromises ice shelves in Antarctica and Greenland, sea levels in Miami and elsewhere appear to be rising at accelerating rates.⁸²

Downgrades of Mortgage-Backed Securities by Month, 2008, RUSSELL SAGE FOUNDATION, <https://www.russellsage.org/research/chartbook/credit-downgrades-mortgage-backed-securities-month-2008>; Gary Corner et al., *Community Bank Lending during the Financial Crisis*, CENTRAL BANKER (2013), <https://www.stlouisfed.org/publications/central-banker/fall-2013/the-troubled-asset-relief-program-five-years-later>; Jonathan Stempel, *After 14 years, Lehman Brothers' Brokerage Ends Liquidation*, REUTERS (Sept. 28, 2022), <https://www.reuters.com/markets/us/after-14-years-lehman-brothers-brokerage-ends-liquidation-2022-09-28/>.

⁸¹ *Bailout Recipients*, PROPUBLICA BAILOUT TRACKER, <https://projects.propublica.org/bailout/list> (last updated Aug. 18, 2022).

⁸² *Sources of Greenhouse Gas Emissions*, U. S. ENV'T PROT. AGENCY, <https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions> (last updated October 5, 2022); *Assessing the Global Climate in July 2019*, NATIONAL CENTERS FOR ENVIRONMENTAL INFORMATION, NATIONAL OCEAN AND ATMOSPHERIC ADMINISTRATION, <https://www.ncei.noaa.gov/news/global-climate-201907>; *Antarctic Ice Shelves Compromised by Combined Effects of Ocean and Atmosphere Warming*, UT NEWS, UNIVERSITY OF TEXAS AT AUSTIN (June 13, 2018), <https://news.utexas.edu/2018/06/13/ice-shelves-compromised-by-effects-of-ocean-and-atmosphere/>; Kenneth Dickerman, *These Photos Explore How Rising Sea Levels Are Affecting Miami*, WASHINGTON POST (Apr. 24, 2020), <https://www.washingtonpost.com/photography/2020/04/24/these-photos-explore-how-rising-sea-levels-are-affecting-miami/>; Andrew Freedman, ET AL., *Millions of Homeowners Face Flood Risks without Realizing It, and Climate Change*

Rising sea levels threaten to inflict economic losses, disrupt food security and water availability, and trigger social dislocation and disorder. A 2016 Freddie Mac estimate projects that the losses, disruption, dislocation and disorder could destroy billions of dollars in property and displace millions of people:

The economic losses and social disruption may happen gradually, but they are likely to be greater in total than those experienced in the housing crisis and Great Recession. That recent experience illustrated the difficulty of allocating losses between homeowners, lenders, servicers, insurers, investors, and taxpayers in general. The delays in resolving these differences at times exacerbated the losses. Similar challenges will face the nation in dealing with the impact of climate change.

According to the Fourth National Climate Assessment, reported to Congress pursuant to the Global Change Research Act of 1990 and released in November 2018, lower-income and other marginalized communities “have lower capacity to prepare for and cope with extreme weather and climate-related events and are expected to experience greater impacts.”⁸³

The World Economic Forum recently reported that, for the first time in the history of its Global Risks Report, the five risks most likely to compromise global stability are all environmental. Current global government policies are projected to raise planet’s average temperature approximately 3°C by the end of this century. One widely-quoted projection pegs the net present value of damage a 3.7°C temperature increase causes over the next 80 years at \$551 trillion. As a comparison point, note that annual global GDP is currently around \$80 trillion. Another projection pegs the global damage being

Is Making It Worse, WASHINGTON POST (June 29, 2020) https://www.washingtonpost.com/weather/2020/06/29/flood-risk-climate-change/?itid=hp_national1-8-12_cwg-flooding-risk-535am%3Ahomepage%2Fstory-ans; Katie Weeman, ET AL., *New Study Finds Sea Level Rise Accelerating*, NASA (Feb. 13, 2018). <https://climate.nasa.gov/news/2680/new-study-finds-sea-level-rise-accelerating/>.

⁸³ R.K. Pachauri ET AL., *Climate Change 2014: Synthesis Report*, IPCC (2014), <https://www.ipcc.ch/report/ar5/syr/>; *Climate Change: What Are the Risks to Financial Stability*, BANK OF ENGLAND (Jan. 10, 2019) <https://www.bankofengland.co.uk/knowledgebank/climate-change-what-are-the-risks-to-financial-stability>; *Sea Level Rise and Flooding*, MIAMI-DADE COUNTY (last visited Dec. 1, 2023), <https://www.miamidade.gov/global/economy/resilience/sea-level-rise-flooding.page>; Sean Beckett & Brocky Lacy, *Life’s a Beach, Economic & Housing Research Insight*, FREDDIE MAC (Apr. 2016), [http://www.freddiemac.com/fmac-resources/research/pdf/April Insight 04 26 16.pdf](http://www.freddiemac.com/fmac-resources/research/pdf/April%20Insight%2004%2026%2016.pdf); *Fourth National Climate Assessment, Volume II: Impacts, Risks and Adaptation in the United States*, U. S. GLOBAL CHANGE RESEARCH PROGRAM (June 2019) <https://nca2018.globalchange.gov>.

done in 2100 by a 3°C temperature increase at about \$9.5 trillion annually. Note that even a 2°C temperature increase is projected to cause damage of \$69 trillion in NPV damage over that time.⁸⁴

These warnings about the damage of global warming are not new. An ExxonMobil intra-company memo painted a picture of greenhouse gas impact on climate starting when temperature rise reaches 1°C. The memo was written in 1982.⁸⁵ The damage the climate crisis has caused and may cause to the global economy cannot be laid exclusively at ExxonMobil's doorstep. That said, the company has known for four decades that burning fossil fuel for transportation degrades the climate and they kept producing and selling that fossil fuel anyway. They've thus participated in engineering the global instability that could eventually cause the collapse of the global economy without which their business cannot operate.

Not as charity or moral responsibility, then, but as matter of self-interest, a company can be well served by thinking about more than whether its business model complies with existing law. Notwithstanding the law, do the industry and economy operate more sustainably thanks to how we participate in it? Company survival may depend on the answer to this question. No law guarantees an economy to be here for us to capitalize on tomorrow morning when we wake up.

⁸⁴ *The Global Risks Report 2020*, WORLD ECONOMIC FORUM, (Jan. 15, 2020) <https://www.weforum.org/reports/the-global-risks-report-2020>; *The Global Risks Report 2023*, WORLD ECONOMIC FORUM (Jan. 11, 2023), <https://www.weforum.org/reports/the-global-risks-report-2023>; *2100 Warming Projections*, CLIMATE ACTION TRACKER, <https://climateactiontracker.org/global/temperatures/> (last updated Nov. 2022); *Risks Associated with Global Warming of 1.5°C or 2°C, Briefing Note*, TYNDALL CENTRE FOR CLIMATE CHANGE RESEARCH (May 2018), https://tyndall.ac.uk/sites/default/files/publications/briefing_note_risks_warren_rl-1.pdf; Chris Lafakis, ET AL., *The Economic Implications of Climate Change*, MOODY'S ANALYTICS (June 2019), <https://www.moodyanalytics.com/-/media/article/2019/economic-implications-of-climate-change.pdf>; *Global Warming of 1.5°C, Chapter 3: Impacts of 1.5°C Global Warming on Natural and Human Systems, Special Report*, INTERNATIONAL PANEL ON CLIMATE CHANGE (Oct. 2018), <https://www.ipcc.ch/sr15/chapter/chapter-3/>; Jeff Desjardins, *The World's \$80 trillion Economy—in One Chart*, WORLD ECONOMIC FORUM (Oct. 15, 2018), <https://www.weforum.org/agenda/2018/10/the-80-trillion-world-economy-in-one-chart/>; Tom Kompas, ET AL., *The Effects of Climate Change on GDP by Country and the Global Economic Gains from Complying with the Paris Climate Accord*, AMERICAN GEOPHYSICAL UNION ADVANCES (July 13, 2018), <https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2018EF000922>; *Risks Associated with Global Warming of 1.5°C or 2°C, Briefing Note*, TYNDALL CENTRE (May 2018), https://tyndall.ac.uk/sites/default/files/publications/briefing_note_risks_warren_rl-1.pdf.

⁸⁵ M.B. Glaser, *Letter re: CO2 "Greenhouse" Effect*, EXXON RESEARCH AND ENGINEERING COMPANY (Nov. 12, 1982), <https://www.climatefiles.com/exxonmobil/1982-memo-to-exxon-management-about-co2-greenhouse-effect/>; *Global Temperature*, NASA, <https://climate.nasa.gov/vital-signs/global-temperature/> (showing global temperature in 1982).

IV

INNOVATION & INSTANT REGULATORY INADEQUACY

Facebook was launched in 2004 with the aim of being “a directory of information for college students.” Only collegians could use it.⁸⁶ Time reported shortly after the site’s launch that it “allows students to network through friends and connect with people in their classes they would like to meet.”⁸⁷

The company enjoyed the protection of the 47 U. S. Code Section 230, enacted in 1996. Section 230 confirmed that, as an “interactive computer service,” Facebook would not be treated as the publisher or speaker of information posted on its site by someone else, nor would it be held liable for good faith efforts to restrict access to or availability of material it considered “obscene, lewd, lascivious, filthy, excessively violent, harassing, or otherwise objectionable, whether or not such material is constitutionally protected.”⁸⁸

Except for two amendments—a 1998 amendment requiring an “interactive computer service” to notify customers of the availability of parental control protections, and a 2018 amendment confirming non-preemption of sex trafficking laws—the statute protecting Facebook and its fellow internet platforms has never changed.⁸⁹

Facebook, by contrast, has changed a lot. Non-collegians have used the site since 2006.⁹⁰ Approximately 3 billion people use the site today.⁹¹ Some have used it to promote genocide in Myanmar, spread disinformation about the coronavirus, and defraud those who rely on the site as a marketplace.⁹²

A British company reportedly used the site in 2014 to influence the 2016 presidential election. Cambridge Analytica reportedly obtained information on approximately 50 million Facebook users

⁸⁶ William Han, *Campus Connection*, TIME MAGAZINE (Sep. 6, 2004), <https://time.com/vault/issue/2004-09-06/page/143/>.

⁸⁷ *Id.*

⁸⁸ 47 U.S.C. § 230.

⁸⁹ *Id.*

⁹⁰ Sarah Lacy, *Facebook: Opening the Doors Wider*, BLOOMBERG (Sept. 11, 2006), <https://www.bloomberg.com/news/articles/2006-09-11/facebook-opening-the-doors-wider?leadSource=verify%20wall>.

⁹¹ *Press Release, Meta Reports Fourth Quarter and Full Year 2022 Results*, META PLATFORMS, INC. (Feb. 1, 2023), <https://investor.fb.com/investor-news/press-release-details/2023/Meta-Reports-Fourth-Quarter-and-Full-Year-2022-Results/default.aspx>.

⁹² Jathan Sadowski, *Facebook Is a Harmful Presence in Our Lives*, THE GUARDIAN (Oct. 6, 2021), <https://www.theguardian.com/commentisfree/2021/oct/06/facebook-scandals-social-media>.

from a Facebook app builder. The firm used that information to make approximately 30 million psychographic profiles of U.S. voters. It then used those profiles to make online ad buys on behalf of 2016 U.S. presidential election campaigns. The ads targeted those voters with the aim of influencing their thoughts and emotions enough to swing their votes.⁹³

Kremlin-backed operation reportedly used the site to influence the same election. The Internet Research Agency started online groups of U.S. Facebook users focusing on issues such as religion, immigration, racism and secession. With the information it collected about these users, the Russians targeted them and others with disinformation designed to influence voter preference in the election. The disinformation was reportedly shared among Facebook users 340 million times.⁹⁴

In the wake of the election interference cases, lawmakers on both sides of the Atlantic called for the company to be broken up. Employee optimism about the company's future dropped. Some concluded that Facebook had become a force that was destroying society.⁹⁵

The Federal Trade Commission fined Facebook \$5 billion for mishandling users' information in connection with the election interference cases. While the fine is significant by most measures, its magnitude shrinks when one considers that in recent years Facebook annual revenues have topped

⁹³ Matthew Rosenberg, ET AL., *How Trump Consultants Exploited the Facebook Data of Millions*, N.Y. TIMES (Mar. 17, 2018), <https://www.nytimes.com/2018/03/17/us/politics/cambridge-analytica-trump-campaign.html>; Mattathias Schwartz, *Facebook Failed to Protect 30 Million Users from Having Their Data Harvested by Trump Campaign Affiliate*, THE INTERCEPT (Mar. 30, 2017), <https://theintercept.com/2017/03/30/facebook-failed-to-protect-30-million-users-from-having-their-data-harvested-by-trump-campaign-affiliate/>; Carole Cadwalladr, ET AL., *Revealed: 50 Million Facebook Profiles Harvested for Cambridge Analytica in Major Data Breach*, THE GUARDIAN (Mar. 17, 2018), <https://www.theguardian.com/news/2018/mar/17/cambridge-analytica-facebook-influence-us-election>; Robinson Meyer, *The Cambridge Analytica Scandal, in Three Paragraphs*, THE ATLANTIC (Mar. 20, 2018), <https://www.theatlantic.com/technology/archive/2018/03/the-cambridge-analytica-scandal-in-three-paragraphs/556046/>; Nicholas Confessore, ET AL., *Data Firm Says "Secret Sauce" Aided Trump; Many Scoff*, N.Y. TIMES (Mar. 6, 2017), <https://www.nytimes.com/2017/03/06/us/politics/cambridge-analytica.html>.

⁹⁴ Nicholas Thompson, *Inside the Two Years that Shook Facebook—and the World*, WIRED (Feb. 12, 2018), <https://www.wired.com/story/inside-facebook-mark-zuckerberg-2-years-of-hell/>; Sheera Frenkel, ET AL., *To Stir Discord in 2016, Russians Turned Most Often to Facebook*, N.Y. TIMES (Feb. 17, 2018), <https://www.nytimes.com/2018/02/17/technology/indictment-russian-tech-facebook.html>; Sheera Frenkel, ET AL., *Delay, Deny and Deflect: How Facebook's Leaders Fought Through Crisis*, N.Y. TIMES (Nov. 14, 2018), <https://www.nytimes.com/2018/11/14/technology/facebook-data-russia-election-racism.html?auth=login-email&login=email>.

⁹⁵ See, e.g., Lauren Gambino, *"Too Much Power": It's Warren v. Facebook in a Key 2020 Battle*, THE GUARDIAN (Oct. 20, 2019, 8:04 AM), <https://www.theguardian.com/us-news/2019/oct/19/elizabeth-warren-facebook-break-up>; Jon Swartz & Ben Walsh, *Facebook Is Under Fire Again. Here's What Could Come Next*, BARRON'S (Dec. 01, 2018, 6:00 AM), <https://www.barrons.com/articles/facebook-is-under-fire-again-why-any-change-may-start-with-washington-1543662000>; Nina Jankowicz & Cindy Otis, *Facebook Groups Are Destroying America*, WIRED (June 17, 2020 8:00 AM), <https://www.wired.com/story/facebook-groups-are-destroying-america/>.

\$100 billion.⁹⁶ And from a regulatory standpoint, note that the fine relates to the company's record on keeping its promises to users concerning the privacy of their user information. That's an important concern, but not the only concern. Thanks to Section 230, Facebook is not liable for the damage caused by the information and disinformation that others post on Facebook.

Facebook's story illustrates how innovation can almost instantly vault an organization's operations—including harms and injustices those operations cause—far enough beyond the scope of existing marketplace regulations that the operations enter an area of regulatory inadequacy so extreme that in effect it's a regulatory vacuum.

Facebook's launch into a regulatory vacuum is not unique. Ride-hailing companies innovated into a space not clearly within the bounds of taxicab regulation.⁹⁷ Short-term rental companies innovated into a space not clearly within the bounds of lodging regulation.⁹⁸ Crypto asset companies have been innovating into a space not clearly within the bounds of commodities or securities regulation.⁹⁹

Facebook's story also illustrates that a company operating in a regulatory vacuum can generate both lots of revenue and lots of harm and injustice that can turn into backlash. Does a company that innovates into a regulatory vacuum imperil its survival by failing to do more than the little required to comply with the minimal regulations that govern it?

⁹⁶ Cecilia Kang, *F.T.C. Approves Facebook Fine of about \$5 Billion*, N.Y. TIMES (July 12, 2019), <https://www.nytimes.com/2019/07/12/technology/facebook-ftc-fine.html>; Mike Isaac & Cecilia Kang, *Facebook Expects to Be Fined Up to \$5 Billion by F.T.C. Over Privacy Issues*, N.Y. TIMES (Apr. 24, 2019), <https://www.nytimes.com/2019/04/24/technology/facebook-ftc-fine-privacy.html>; *FTC Imposes \$5 Billion Penalty and Sweeping New Privacy Restrictions on Facebook*, Federal Trade Commission, FTC (July 24, 2019), <https://www.ftc.gov/news-events/news/press-releases/2019/07/ftc-imposes-5-billion-penalty-sweeping-new-privacy-restrictions-facebook>; *Meta Reports Fourth Quarter and Full Year 2022 Results*, META (Feb. 1, 2023), <https://investor.fb.com/investor-news/press-release-details/2023/Meta-Reports-Fourth-Quarter-and-Full-Year-2022-Results/default.aspx>.

⁹⁷ Dara Kerr, *EU Court Asks: Is Uber An App or Taxi Service?*, CNET (Nov. 29, 2016, 4:43 PM), <https://www.cnet.com/tech/tech-industry/is-uber-an-app-or-taxi-service-eu-court-asks/>.

⁹⁸ Richard Trenholm, *Airbnb Exec Denies Competition With Hotels, Says An Airbnb Trip "Changes You"*, CNET (Mar. 3, 2015, 5:25 AM), <https://www.cnet.com/tech/services-and-software/airbnb-exec-denies-competition-with-hotels-says-an-airbnb-trip-changes-you-somehow/>.

⁹⁹ See Jay Clayton, *Statement on Cryptocurrencies And Initial Coin Offerings*, SEC (Dec. 11, 2017), https://www.sec.gov/news/public-statement/statement-clayton-2017-12-11#_ftnref5; Matt Clinch, *Bitcoin Now Classed As A Commodity In The US*, CNBC (Sept. 18, 2015, 3:48 PM) <https://www.cnbc.com/2015/09/18/bitcoin-now-classed-as-a-commodity-in-the-us.html>.

If peril consists of backlash like being targeted for break-up by lawmakers worldwide, being accused of undermining society's greater aspirations, being used as a tool for transmitting stolen election fever, and being abandoned by employees talented enough to find work at a place about which they feel optimistic, then, yes, company survival is imperiled. Facebook could be legislated into pieces. It could all by itself produce enough societal liquefaction, especially in the form of governmental dysfunction, to cause the collapse of its own business model.

It could also be blindsided by a court ruling that, while toxic information on its site was posted by a third party, it was brought to users' attention by company algorithms, and so the company cannot claim the harm and injustice caused by the toxic information is within the bounds of Section 230 protection, and cannot escape responsibility for that harm and injustice.¹⁰⁰ In that case the glacier of business-model-related harm and injustice that the company has allowed to build up over the years could turn into a liability avalanche that would bury even a \$100 billion annual revenue stream.

As with Boeing, the final chapter on Facebook's story and the backlash arising from the harm and injustice its business model has built up has thus yet to be written.

Perhaps the biggest takeaway from Facebook's story relates to other companies that will confront the question Facebook confronted on how to operate in an area of regulatory inadequacy or regulatory vacuum. Executives committed to leadership, and companies unwilling to compromise their survival and bankrupt their reputational capital account need tools to create a culture that does not settle for generating lots of revenue and lots of backlash-ready harm and injustice.

¹⁰⁰ *Gonzalez v. Google LLC*, 2 F.4th 871, 879 (9th Cir. 2021); see Cat Zakrzewski, ET AL., *Supreme Court Hears a Case that Could Transform the Internet*, WASHINGTON POST (Feb. 21, 2023), <https://www.washingtonpost.com/technology/2023/02/20/google-v-gonzalez-section-230/>.

V

A CULTURE TO ANTICIPATE, SURVIVE & CAPITALIZE ON REGULATORY INADEQUACY

Private investment in artificial intelligence companies, which totaled less than \$5 billion in 2013, totaled \$93 billion in 2021. More than 3,200 AI companies have received funding since 2013. Meanwhile a 2021 McKinsey survey indicates that only 36% of respondent companies are taking steps to mitigate risks related to regulatory compliance.¹⁰¹

The relative disinterest in regulatory risk mitigation is not entirely surprising. Since 2015, the U.S. federal government has passed only three laws related to AI, one of which funded research. Collectively, the 50 states have passed 66 laws during the same period.¹⁰² Globally, interest in AI regulation shows signs of rising but, predictably, is uncoordinated.¹⁰³

As the AI community tries to forecast how governments and agencies worldwide will regulate the torrent of AI systems being ‘algorithmized’ into existence, they could use a good anecdote. Do we have a story that features large quantities of start-up mania, investor excitement and regulatory inadequacy? One that might illuminate basic elements of a company culture that AI investors and companies could use to begin building a culture that would anticipate, survive and even capitalize on the regulatory risks they will face in their future?

In fact, the story of daily fantasy sports (DFS) companies during the last months of 2015 offers the AI community a set of useful insights.

Daily Fantasy Sports: The Early Years

In July 2015 DraftKings raised \$300 million. Its investors included FOX, Major League Baseball and the National Hockey League. FanDuel raised \$275 million. Its investors included Google, Time Warner, NBC and Comcast. The position taken by FanDuel, DraftKings and the Fantasy Sports Trade Association was that, under the federal government's Unlawful Internet Gambling

¹⁰¹Daniel Zhang, ET AL., *Artificial Intelligence Index Report 2022*, STAN. UNIVERSITY 152, 157, 164, 176-80, https://aiindex.stanford.edu/wp-content/uploads/2022/03/2022-AI-Index-Report_Master.pdf.

¹⁰²*Id.*

¹⁰³See Alex Engler, *The EU And US Are Starting To Align On AI Regulation*, BROOKINGS (Feb. 1, 2022), <https://www.brookings.edu/blog/techtank/2022/02/01/the-eu-and-u-s-are-starting-to-align-on-ai-regulation/>.

Enforcement Act (UIGEA), DFS was legal because it fit within the Act's carve-out for fantasy sports. They also took the position that DFS was legal under the laws of 45 of the 50 states (everyone except Arizona, Idaho, Louisiana, Montana and Washington) because DFS was not gambling. They took the position that DFS was a game of skill, not a game of chance.¹⁰⁴

During the first week of the 2015 NFL season, DraftKings and FanDuel spent more than \$27 million to run approximately 8000 television ads during NFL game telecasts.¹⁰⁵

In October 2015, a DraftKings employee earned a \$350,000 prize playing on FanDuel's site. The Nevada Gaming Commission declared that DFS was gambling and a DFS company could not operate in that state without a license. Licenses in Nevada are difficult and costly to obtain. Customers alleged fraud, negligence and false advertising in class action lawsuits filed against FanDuel and DraftKings in Florida, Illinois, Louisiana, and New York.¹⁰⁶

In November 2015, New York Attorney General Eric Schneiderman ordered FanDuel and DraftKings to cease operations in New York. He claimed their activities constituted illegal gambling under state law. A week later he filed a lawsuit seeking an injunction prohibiting FanDuel and DraftKings from operating in New York. At the time, New York was reportedly the DFS industry's largest market. The Massachusetts Attorney General proposed regulations for all DFS companies

¹⁰⁴ Tom Huddleston Jr., *Fantasy Sports Site DraftKings Takes Bets From More Big Name Investors*, FORTUNE (July 27, 2015), <http://fortune.com/2015/07/27/draftkings-300-million-funding/>; Justine Sacco, *FanDuel Announces Series E Financing of \$275 Million from KKR, Google Capital And Time Warner*, BUSINESS WIRE (July 14, 2015, 8:00 AM), <https://www.businesswire.com/news/home/20150714005506/en/>; Eugene Kim, *Billion-dollar sports-gambling startups DraftKings and FanDuel are Legal because of a loophole in the law*, BUSINESS INSIDER (Sept. 11, 2015, 8:50 AM), <https://www.businessinsider.com/why-draft-kings-and-fanduel-are-legal-2015-4>. (Illustrating DFS' fit within the UIGEA was problematic even on the industry's best day, because the Act regulated "fantasy sports" but made no mention of "daily fantasy sports").

¹⁰⁵ Joe Drape & Ken Belson, *An Ad Blitz For Fantasy Sports Games, But Some See Plain Old Gambling*, N.Y. TIMES (Sept. 16, 2015), <http://www.nytimes.com/2015/09/17/sports/football/draftkings-fanduel-fantasy-sports-games.html>.

¹⁰⁶ Joe Drape, *Nevada Says It Will Treat Daily Fantasy Sports Sites As Gambling*, N.Y. TIMES (Oct. 15, 2015), <http://www.nytimes.com/2015/10/16/sports/gambling-regulators-block-daily-fantasy-sites-in-nevada.html>; Faiss, Robert D., ET AL., *Nevada Gaming Licensing Qualifications, Standards, and Procedures*, Center for Gaming Research, University of Nevada, Las Vegas, NEV. GAMING CONTROL BD. & GAMING COMM' (Oct. 2011), http://gaming.unlv.edu/papers/cgr_op11_faiss_gemignani.pdf; *License Fees and Tax Rate Schedule*, NEV. GAMING CONTROL BD. & GAMING COMM'N, <http://gaming.nv.gov/index.aspx?page=94#non-games-annual>; Adam Johnson v. FanDuel, Inc., No. 15-cv-7963 (S.D.N.Y. 2015), <http://www.legalsportsreport.com/wp-content/uploads/2015/10/Class-Action-DFS.pdf>; Thomas Guarino v. DraftKings, Inc., No. 3:15-cv-1123 (S.D. Ill. 2015), <http://www.legalsportsreport.com/wp-content/uploads/2015/10/Illinois-Class-Action.pdf>; Antonio Gomez v. FanDuel, Inc., No. 1:15-cv-23858-PCH (S.D. Fla. 2015), <http://www.legalsportsreport.com/wp-content/uploads/2015/10/Florida-Class-action.pdf>; Artem Genchanok v. FanDuel, Inc., No. 2:15-cv-15127-mVL-KWR (E.D. La. 2015), <http://www.legalsportsreport.com/wp-content/uploads/2015/10/Louisiana-Class-Action.pdf>.

operating in Massachusetts.¹⁰⁷

In December 2015, a pro-DFS bill died in the Illinois state legislature, hastened to its demise in part by the lobbying of an Illinois casino company. The Illinois Attorney General announced that, under Illinois law, DFS constituted gambling.¹⁰⁸

In January 2016, the New York Times Magazine reported that the betting economy created for customers by FanDuel and DraftKings was “highly unstable and corrupt.” New York Attorney General Schneiderman amended his complaint to include a request for an order requiring FanDuel and DraftKings to give back the hundreds of millions of dollars they have made in New York, and to pay a penalty for running what he argued were illegal gambling operations.¹⁰⁹

FanDuel and DraftKings eventually settled the New York lawsuit for \$6 million each. Return on investment in the two companies was missing in action for years after the winter of their legal discontent. One of them lost \$73 million in 2017, \$76 million in 2018, and \$146 million in 2019.¹¹⁰

Elements of a Powerful Culture

What insights can AI companies and investors take from this multi-jurisdictional cyclone of regulatory hot water and class action wrath?

Lawmakers Make Laws. The chances in 2015 that DFS companies would continue indefinitely

¹⁰⁷ Walt Bogdanich, ET AL., *Attorney General Tells DraftKings and FanDuel to Stop Taking Entries in New York*, N.Y. TIMES (Nov. 10, 2015), <http://www.nytimes.com/2015/11/11/sports/football/draftkings-fanduel-new-york-attorney-general-tells-fantasy-sites-to-stop-taking-bets-in-new-york.html>; Joe Draft, *End Sought To Fantasy Sites In New York; Yahoo Is Said To Be Added To Inquiry*, N.Y. TIMES (Nov. 17, 2015), <http://www.nytimes.com/2015/11/18/sports/football/draftkings-fanduel-new-york-attorney-general-injunction.html>; Joe Drape, *Massachusetts Attorney General Proposes Fantasy Sports Regulations*, N.Y. TIMES (Nov. 19, 2015), <http://www.nytimes.com/2015/11/20/sports/massachusetts-attorney-general-proposes-fantasy-sports-regulations.html>.

¹⁰⁸ Van Natta & Don Jr., *Welcome to the Big Time*, ESPN (Aug. 24, 2016), http://www.espn.com/espn/feature/story/_/id/17374929/otl-investigates-implosion-daily-fantasy-sports-leaders-draftkings-fanduel; Opinion of Lisa Madigan, Illinois Attorney General, File No. 15-006, Office of the Attorney General, State of Illinois (Dec. 23, 2015), <http://www.legalsportsreport.com/wp-content/uploads/2015/12/Illinois-DFS.pdf>.

¹⁰⁹ Jay Caspian Kang, *How the Daily Fantasy Sports Industry Turns Fans Into Suckers*, N.Y. TIMES MAGAZINE (Jan. 6, 2016) http://www.nytimes.com/2016/01/06/magazine/how-the-daily-fantasy-sports-industry-turns-fans-into-suckers.html?_r=0&mtref=undefined; *New York v. DraftKings, Inc.*, No. 453054-2015, <https://iapps.courts.state.ny.us/fbem/DocumentDisplayServlet?documentId=DxfTcnICQijCeUWHK1z6yA==&system=prod>; Joe Drape, *New York Wants Fantasy Customers Repaid*, N.Y. TIMES (Jan. 1, 2016), <http://www.nytimes.com/2016/01/02/sports/revise-complaint-seeks-return-of-money-bet-on-fantasy-sports.html>.

¹¹⁰ Dustin Gouker, *DraftKings, FanDuel Pay \$6 Million Each to Settle New York Daily Fantasy Sports Case*, LEGALSPORTSREPORT (Oct. 25, 2016) <https://www.legalsportsreport.com/11901/draftkings-fanduel-pay-6-million-in-new-york-case/>.

to operate in a 45-state regulatory vacuum were virtually zero. Their marketplace involved too much money, too many people who could be harmed, and too many potential regulators for regulatory inertia. For the same reasons, increased regulation is almost surely on the horizon for the AI community. Some feel ML-powered facial recognition, for example, effectively subjects every citizen to Fourth Amendment-violating government surveillance, à la Person of Interest. That surveillance has already led to the wrongful arrest, detention and arraignment of a Black man in Michigan. The harm was compounded when the Detroit Police and Wayne County prosecutor didn't bother to apologize until weeks after the New York Times publicized the case.¹¹¹ Outcry about harm such as this will likely force lawmakers to act.

Regulatory Chaos Happens. The chances in 2015 that 45 states of lawmakers would move in DFS-friendly lockstep as they enacted their laws were also virtually zero. Similarly, no matter how intelligent or desirable uniformity of AI regulation may seem to some, the chances of that regulation being uniform are also virtually zero. The California legislature, the European Commission, China's Ministry of Industry and Information Technology, and the US Senate are unlikely, for example, to see AI through an identical political and economic lens. A regulator with aspirations for higher office could make Eric Schneiderman's approach look like a day at the beach. What is the worst-case regulatory scenario, and can the company operate productively in that scenario? Boards and investors are wise to consider this question starting today.

Certainty Deceives. Notwithstanding the pro-fantasy provisions of the UIGEA, one would think that Google, MLB, NBC, Time Warner, DraftKings, FanDuel *et al.* knew when they embarked on their endeavor—given that DFS was at least a cousin of gambling and was already prohibited in five states—that multiple battles over significant DFS regulation and perhaps prohibition could arise. Apparently, however, they were distracted by input like this: “[A]n outside law firm hired by MLB

¹¹¹ Kate Conger et al., *San Francisco Bans Facial Recognition Technology*, N.Y. TIMES (May 14, 2019) <https://www.nytimes.com/2019/05/14/us/facial-recognition-ban-san-francisco.html>; Joshua Rothman, “Person of Interest”: *The TV Show that Predicted Edward Snowden*, NEW YORKER New (Jan. 14, 2014) <https://www.newyorker.com/culture/culture-desk/person-of-interest-the-tv-show-that-predicted-edward-snowden>; Kashmir Hill, *Wrongfully Accused by an Algorithm*, N.Y. TIMES (June 24, 2020) https://www.nytimes.com/2020/06/24/technology/facial-recognition-arrest.html?action=click&block=associated_collection_recirc&impression_id=845964705&index=1&pgtype=Article®ion=footer.

concluded that DraftKings ‘overwhelmingly’ offered games of skill, not chance.’ The AI community will do well to keep in mind that service providers are not regulators.¹¹²

Procrastination Kills. One DFS investor admitted, “We thought the regulatory issues were going to have to be flushed out at some point...But no one anticipated the fervor of what happened and the way [the authorities] directed their energies [against the industry].” To unprepared AI investors and directors, regulation will appear to arrive like a bolt of lightning. Today is a good day to start considering what regulation might look like.¹¹³

Culture Reveals. What might AI regulation look like? Think back to our owners of Merrimack River Fire & Life and whether they were astute in the way they assessed the cultural landscape in the years prior to the Equal Pay Act becoming law.

Perhaps they saw that male steelworkers valued wage equity for women enough to be willing to revolt against the practice of gender-based wage discrimination. In 1943 800 workers building locomotives at Pittsburgh’s H. K. Porter Company, all but a handful of whom were men, staged a wildcat strike—i.e., a work stoppage by unionized workers without union authorization—demanding equal pay for women.¹¹⁴

Perhaps they noticed that the Pennsylvania legislature managed to pass an equal pay law in 1947.¹¹⁵ Perhaps they noticed that, in 1952, the Women’s Bureau of Department of Labor held a National Conference on Equal Pay.¹¹⁶

Perhaps they noticed that, by 1955 the United Auto Workers had established a Women’s Department to address equal pay, training and seniority protection for women.¹¹⁷ Perhaps they noticed

¹¹² Don Van Natta, *Welcome to the Big Time*, ESPN (Aug. 24, 2016), http://www.espn.com/espn/feature/story/_/id/17374929/otl-investigates-implosion-daily-fantasy-sports-leaders-draftkings-fanduel.

¹¹³ *Id.*

¹¹⁴ *Men Strike for Equal Pay for Women; Wildcat Action Shuts Pennsylvania Plant*, N.Y. TIMES (Jan. 5, 1943), https://timesmachine.nytimes.com/timesmachine/1943/01/06/87407066.pdf?pdf_redirect=true&ip=0.

¹¹⁵ *Gov. Duff Signs Equal-Pay Bill*, N.Y. TIMES (July 9, 1947), https://timesmachine.nytimes.com/timesmachine/1947/07/09/87779801.pdf?pdf_redirect=true&ip=0.

¹¹⁶ *Women to Campaign for Equal Pay Law*, N.Y. TIMES (Apr. 2, 1952), https://timesmachine.nytimes.com/timesmachine/1952/04/02/93362210.pdf?pdf_redirect=true&ip=0.

¹¹⁷ *UAW Women’s History Month Spotlight: Caroline Davis*, UNITED AUTOWORKERS (Mar. 23, 2016), <https://uaw.org/uaw-womens-history-month-spotlight-caroline-davis/>.

that, by 1959, 28 nations, not including the United States, had ratified the International Labour Organization's Equal Remuneration Convention.¹¹⁸

Perhaps the MRF&L owners also realized that the values, practices and conventions represented by these events, while not law, were too important to dismiss. Politicians and cable news co-hosts have recently displayed a fondness for saying America is a nation of laws. While true on one level, this statement delivers less than a full picture. Perhaps the MRF&L owners realized that, more fundamentally, America is a nation of values, practices and conventions, good and bad, all of which influence life, and some of which become shared so widely and adamantly that they are legislated into requirements, aka laws.¹¹⁹

Perhaps the MRF&L owners also appreciated the instinct society has exhibited, at least to date, for moving away from harm and injustice, toward a higher standard of living. In all likelihood, for example, at least some of the contract disputes that took place prior to the arrival of contract law were settled by the parties with the pre-judicial equivalent of hockey sticks. With the arrival of contract law, however, contract parties had more than a CCM-type product to use as leverage for preventing contract inequity, demanding contract performance and collecting contract damages. The parties could instead use contract law to guide negotiations and settle disputes. Society's standard of living immediately rose, inasmuch as commerce no longer entailed so many trips to the dentist.¹²⁰

In some respects, any law reflects this societal instinct for moving away from harm and injustice. It gives leverage to those who would join or remain among the ranks of the damaged if the law-free status quo continued. Perhaps the MRF&L owners saw the values, practices and conventions surrounding gender-based pay were arcing toward equality and were thus in sync with this societal instinct for a higher standard of living. Perhaps our MRF&L owners recognized these values, practices and conventions as candidates for coalescing into law.

And perhaps our MRF&L owners realized that just because the law is not here now doesn't mean harm and injustice aren't being done, and doesn't mean that cultural values, practices, and

¹¹⁸ Ratifications of C100 – Equal Remuneration Convention, 1951 (no. 100), International Labour Organization, https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:11300::NO:11300:P11300_INSTRUMENT_ID:312245:NO.

¹¹⁹ "Culture", MERRIAM-WEBSTER (last updated Dec. 4, 2023), <https://www.merriam-webster.com/dictionary/culture#synonyms>.

¹²⁰ *JetSpeed FT5 Pro*, North Edition, CANADA CYCLE & MOTOR COMPANY, <https://us.ccmhockey.com/jetspeedft5pro.html> (last visited Nov. 25, 2023).

conventions that could eventually coalesce into law are not in the process of evolving, however slowly, in that direction.

Congress passed the Sherman Act in 1890, for example, in part to outlaw any agreement that restrained interstate commerce and to prevent large organizations from using such agreements to monopolize markets and exploit consumers. Large organizations responded by successfully using the Act to undermine labor unions. They argued that, in negotiating wages and benefits for members, unions constituted a group with an agreement to restrain trade in interstate commerce. Congress ended this practice of misusing the Sherman Act by passing the Clayton Act, which specifically states that labor unions are not organizations agreeing to restrain trade illegally under the Sherman Act. And thus, all was well. Congress' clarification, however, was no quick fix. 24 years passed between the Sherman Act and the Clayton Act.¹²¹

So, if our MRF&L owners saw that values, practices, and conventions regarding gender-based wage discrimination could one day coalesce into a law, they may have developed a strategy for the day when the law would require them to pay women and men equally. Perhaps they started equal pay practices proactively. Perhaps they adjusted their product pricing to offset the increased expense. Maybe they shifted both internal communications and marketing, realizing that equal pay practices could help minimize staff turnover and inspire customer admiration and loyalty. On that June 1963 day when the Equal Pay Act arrived, our MRF&L owners might not have been as delighted as Kennedy, but they might have been prepared.

In any case, when the Equal Pay Act arrived, 19 years after Congresswoman Stanley's House Resolution, the values, practices and conventions from which it coalesced, including the damage to women, had been on display throughout the culture for anyone to notice for the entire time. There was no need for our MRF&L owners to be surprised. Same for anyone whose fortunes shifted with the arrival of the Fair Housing Act of 1968, the revenge porn laws passed in 46 states between 2013 and 2019, or the Clayton Act of 1914. The values, practices and conventions—i.e., the culture—from which those laws coalesced, including the harm and injustice suffered by people those laws protected, had been on display prior to their arrival for anyone to notice. All anyone had to do was look around.

¹²¹ See *Loewe v. Lawlor*, 208 U.S. 274 (1908).

Similarly, the values, practices, attitudes and goals concerning AI that might become shared widely and adamantly enough to be legislated into requirements are on display. The question is whether AI companies are willing to think beyond compliance with current law. DFS companies incurred customer and regulator wrath because those companies allowed their compliance with UIGEA to blind them to the harm and injustice they were causing. The AI community has an opportunity to do better.

Regulators may in fact struggle to regulate AI and ML innovation effectively, so thinking beyond compliance would seem to be good strategy. Does our AI work improve our standard of living? A focus on this question may help prevent strategies that cause a DFS-like build-up of harm and injustice that can be turned into backlash against the company and the community. That focus may also promote strategies that help the company and the economy function well, so that the company can continue to do commercially inventive and societally valuable work.

A company, of course, is not democratically chosen for leadership on the first Tuesday in November. It has no power to investigate beyond its own operations, and no power to impose laws. Yet in a society of values, one that needs values to be widely and adamantly shared to function because the values are where the laws originate, a company that cultivates a culture with powerful values is a force to be reckoned with.

The stakes are thus great for society when a company confronts regulatory inadequacy, and they are great for the company, too. Compliance has always been a dangerous corporate legal strategy, because it precipitates a build-up of harm and injustice. The danger is greater today because, thanks to technology, the speed and size of backlash can be greater than it could be in, say, Winifred Stanley's day. A company that goes beyond compliance in an effort to eliminate business-model-related harm and injustice gives itself and society the best chance for a bright future. That company can lead.

VI

CONCLUSION

Many people on both sides of the political spectrum find regulation as is to be inadequate for society's purposes. They are all convinced we live in a time when so-called regulations only funnel us toward some form of tyranny and economic dystopia.

Companies may consider how regulatory change will impact their compliance program, but CEOs looking to lead an organization to its brightest future will look well past compliance. They will address harms and injustices arising from their business model but not made unlawful by regulation, not as a matter of charity or ethics, but rather as a matter of self-interest. They will acknowledge the shortcoming of compliance, and the leadership, financial and societal costs of committing to it. They will admit, especially in light of recent Delaware case law, that a company's regulatory risk includes not just compliance failure but also regulatory inadequacy aka the possibility that regulation will be inadequate to prohibit the build-up of business model-related harms and injustices that could trigger backlash that damages or even destroys the company. They will see that a company willing to go beyond its legal duty to minimize business-model-related harms and injustices can position itself to build a culture that anticipates, survives and capitalizes on its future regulatory risk, and to lead.

BLACK BOX ALGORITHMS IN CAPITAL MARKETS: THE SINGULARITY EVENT

WORTH PREVENTING

BY: DYLAN RAYMOND¹

ABSTRACT

This Article challenges the assumption that the union of artificial intelligence (“AI”) and trading algorithms is a positive-sum game for capital markets and posits that capital market integrity is at risk from particular machine learning (“ML”) algorithms. Algorithms are ubiquitous and necessary for the proper functioning of modern trading markets. The benefits derived from advances in algorithmic trading over the last half-century have benefitted retail investors and hedge fund managers alike. But as algorithms steadily become more autonomous, their impact shifts from efficiency gains to possible market meddling. Specifically, deep learning (“DL”) algorithms, often called “black box” algorithms, jeopardize capital market operations by using hidden and often incomprehensible information processing layers to achieve an objective, raising legal, transparency, and fairness concerns.

Faced with the risks of certain black box algorithms, this Article argues that U.S. markets should indefinitely ban the use of DL algorithms to preserve the fair and efficient operation of capital markets. As a backdrop for this argument, this Article takes a deep dive into algorithms, setting the foundation of how deterministic algorithms and algorithmic trading work before exploring more recent and increasingly autonomous algorithms that use ML techniques enhanced

¹© 2023 Dylan Raymond. S.J. Quinney College of Law, University of Utah, Class of 2023. I am grateful to Professor Jeff Schwartz, whose enduring support and expert guidance made this article what it is, and to my wife, Payton McGriff, whose partnership made writing this Article—and law school generally—such a fun and rewarding experience. I also greatly appreciate the editors of the *Rutgers Business Law Review* for their diligent review of my submission.

by DL. DL unlocks truly autonomous capabilities in algorithms, and experiments have shown that DL trading algorithms in controlled environments decide to manipulate the environment without any human directive to act manipulatively, concluding that doing so is the optimal path to maximize profit. To be fair, this Article spends time crediting the past and present wonders of algorithms, most notably providing affordable and accessible market access for all investors, but it then highlights the problematic future if autonomous algorithms take over and exacerbate existing algorithmic problems while introducing a new species of complications.

As this Article describes, current and proposed regulatory structures are ill-suited for governing autonomous algorithms. Algorithmic trading regulation relies heavily on self-governance and flexible standards, but more problematic is the assignment of liability to an autonomous algorithm, whose lack of identifiable intent to manipulate the market confounds securities laws. Proposed alternative regulatory frameworks, such as strict liability or human-in-the-loop regimes, fail to provide adequate safeguards while introducing their own disruptions to a functioning market. This Article concludes that without a workable legal solution, and with the zero-sum game reality of DL algorithms that benefit their owners at the expense of other market participants while unleashing an algorithmic “invisible hand” into the market beyond the control or comprehension of investors and regulators, U.S. market should ban DL algorithms. Such a ban would likely require loosening trading firm proprietary protections and increasing the severity of penalties for using DL algorithms.

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I. INTRODUCTION

In 1993, scientist and science fiction writer Vernor Vinge said, “[w]ithin thirty years, we will have the technological means to create superhuman intelligence. Shortly after, the human era will be ended.”² This gloomy outlook is dubbed “technological singularity,” which refers to the point in time when “ordinary humans [are] overtaken by artificially intelligent machines or cognitively enhanced biological intelligence”³ and “where technology growth is out of control

² Vernor Vinge, *What is the Singularity?*, N.Y. TIMES ARCHIVE, <https://archive.nytimes.com/www.nytimes.com/library/cyber/surf/1120surf-vinge.html> (last visited Dec. 20, 2022).

³ Murray Shanahan, *The Technological Singularity*, MIT PRESS (Aug. 7, 2015), <https://mitpress.mit.edu/9780262527804/the-technological-singularity/>.

and irreversible.”⁴ A typical plot of science fiction movies and tv shows,⁵ it does not yet appear that robots have taken over society. But artificial intelligence (“AI”) is undoubtedly on the rise, and its capabilities are far-reaching. AI using natural language processing (“NLP”) can write indistinguishably like Shakespeare using only a passage from the writer as an example,⁶ or AI can render pieces of art based on a text description of what you’d like to see.⁷ The AI program “AlphaZero” mastered chess, shogi, and go in less than a day—by playing against itself—before defeating human world champions.⁸ As replacements for human judgment, algorithms have replaced “tax advisors, company directors, and even priests.”⁹ In healthcare, AI led to accelerated genome sequencing, drug development, and vaccines for COVID-19¹⁰ and treatment for Ebola.¹¹ A former Google engineer believes he created a sentient AI, with the AI claiming awareness of its consciousness and stating, “‘ I want everyone to understand that I am, in fact, a person.’”¹² These represent only a few examples of what AI has achieved and can achieve.

⁴ Nick Barney & Andrew Zola, *Singularity (the)*, TECHTARGET.COM, <https://www.techtarget.com/searchenterpriseai/definition/Singularity-the> (Last updated May, 2023).

⁵ See Rehoboam, WESTWORLD WIKI, <https://westworld.fandom.com/wiki/Rehoboam> (last visited Dec. 3, 2023) (chronicling “Rehoboam,” an artificially intelligent quantum computer system that “impose[s] an order to human affairs by careful manipulation and prediction of the future, including “predicting how, and when, a human subject will die,” in Westworld Season 3); I-ROBOT (Twentieth Century Fox 2004) (a central artificial intelligence computer determines that humans will cause their own extinction and thus decides to control humanity), WALL-E (Walt Disney Pictures 2008); THE MATRIX (Warner Bros. Entertainment 1999).

⁶ Stephen Marche, *Of God and Machines*, ATLANTIC (Sept. 15, 2022), <https://www.theatlantic.com/technology/archive/2022/09/artificial-intelligence-machine-learning-natural-language-processing/661401/>.

⁷ *Five recent breakthroughs in AI you probably missed*, TRTWORLD, <https://www.trtworld.com/magazine/five-recent-breakthroughs-in-ai-you-probably-missed-57056>.

⁸ Thomas Vato, *Notable AI Advancement in the Last Decade*, MEDIUM (Feb 8, 2022), <https://medium.datadriveninvestor.com/notable-ai-advancements-in-the-last-decade-2ce496004994>.

⁹ Karni A. Chagal-Feferkorn, *Am I an Algorithm or A Product? When Products Liability Should Apply to Algorithmic Decision-Makers*, 30 STAN. L. & POL’Y REV. 61, 64 (2019).

¹⁰ Sali Abubaker Bagabir, Nahla Khamis Ibrahim, Hala Abubaker Bagabir & Raghdah Hashem Ateeq, *Covid-19 and Artificial Intelligence: Genome Sequencing, Drug Development and Vaccine Discovery*, 15 J. INFECTION & PUB. HEALTH 289 (2022).

¹¹ *New Ebola Treatment Using Artificial Intelligence*, ATOMWISE (Mar. 24, 2015), <https://www.atomwise.com/2015/03/24/new-ebola-treatment-using-artificial-intelligence/>.

¹² Leonardo De Cosmo, *Google Engineer Claims AI Chatbot is Sentient: Why That Matters*, SCI. AM. (Jul. 12, 2022), <https://www.scientificamerican.com/article/google-engineer-claims-ai-chatbot-is-sentient-why-that-matters/> (showcasing the human-sounding conversations with the AI, though noting that most experts doubt it is true AI consciousness, instead believing that the AI is emulating, not simulating, human consciousness).

This Article concerns the impact of AI on the world of finance, specifically the merging of AI and trading algorithms. Trading algorithms dominate today's stock markets, accounting for ninety percent of all trades on the market.¹³ Indeed, algorithms have existed in financial markets since at least the 1970s, when Jack Bogle founded Vanguard and created the world's "first index fund, thus automating the simplest possible portfolio allocation."¹⁴ Trading algorithms evolved from there, becoming a tool for quantitative hedge funds that use algorithms to analyze vast amounts of market data and identify favorable investments.¹⁵ They spurred the replacement of trading floor "middlemen" with computerized, lower-cost trading environments.¹⁶ In the next phase, algorithms began to move from "rules-based machine[s]" to "taking over human investors' final task: analyzing information in order to design investment strategies."¹⁷ Some of these algorithms use deep machine learning ("DL") and AI to develop investment strategies. At some point, algorithms cross a line where algorithm developers stop understanding how an algorithm reaches its conclusion, known as the "black box" problem.¹⁸ Currently, the intricacies of these "black box" algorithms render them ungovernable. Not only do we not understand how some algorithms work, but they are often "obscured by a triple layer of technical complexity, secrecy, and 'economic espionage' laws that can land would-be whistle-blowers in prison—[which] prevent us from understanding what is truly going on in many major financial firms."¹⁹

¹³ Gina-Gail S. Fletcher, *Deterring Algorithmic Manipulation*, 74 VAND. L. REV. 259, 287 (2021).

¹⁴ *The stockmarket is now run by computers, algorithms and passive managers*, BRIEFING, ECONOMIST (Oct. 5, 2019), <https://www.economist.com/briefing/2019/10/05/the-stockmarket-is-now-run-by-computers-algorithms-and-passive-managers> [hereinafter *stockmarket is now run by computers*].

¹⁵ *Id.*

¹⁶ Frank Pasquale, *Law's Acceleration of Finance: Redefining the Problem of High-Frequency Trading*, 36 CARDOZO L. REV. 2085, 2089 (2015).

¹⁷ *stockmarket is now run by computers*, *supra* note 14.

¹⁸ Alessio Azzutti, Wolf-Georg Ringe & H. Siegfried Stiehl, *Machine Learning, Market Manipulation, and Collusion on Capital Markets: Why the "Black Box" Matters*, 43 U. PA. J. INT'L L. 79, 115 (2021) (Introducing the "black box" problem).

¹⁹ Frank Pasquale, THE BLACK BOX SOCIETY 103 (2015).

Alan Greenspan, former Chair of the Federal Reserve of the United States, said that today's markets are "driven by an 'unredeemably opaque' version of Adam Smith's 'invisible hand.'"²⁰

This paper argues that the United States should indefinitely ban autonomous—specifically, DL—trading algorithms from capital markets, ensuring the fair and efficient operation of the capital markets. Part I of this paper will provide a deep dive into trading algorithms, in the past, present, and future, including the differences between machine learning ("ML") algorithms and the unique subset of DL algorithms.²¹ Part II will focus on the benefits of algorithms, while Part III will focus on the problems associated with these trading algorithms, emphasizing autonomous algorithms. Part IV will examine the current and inadequate regulatory approach to trading algorithms and why introducing autonomous trading algorithms exacerbates regulatory shortcomings. Part V will argue that banning DL algorithms is a necessary step to preserve the integrity of the capital markets because DL algorithms are ungovernable, provide little benefit, and potentially pose societal costs, and will consider what the ban may look like, including possible procedures and severe penalties for those who try to bypass the ban. This path makes the necessary trade for fairness and integrity over innovation in the world of finance, avoiding a singularity-type event where autonomous algorithms assume market control.

II. TRADING ALGORITHMS EXPLAINED

As alluded to above, trading algorithms are ubiquitous. They "enable trading at speeds and levels of adaptiveness that are impossible for human beings."²² Beyond their pervasive

²⁰ *Id.* at 102.

²¹ This paper uses autonomous, black box, and DL algorithms interchangeably.

²² Megan Shearer, Gabriel Rauterberg & Michael Wellman, *Machine Learning, Algorithmic Trading, and Manipulation*, CLS BLUE SKY BLOG (Sept. 19, 2022), <https://clsbluesky.law.columbia.edu/2022/09/19/machine->

presence, algorithms come in all shapes and sizes, indicating that a detailed understanding of what they are and how they operate is a necessary foundation for figuring out what to do with them. This section will attempt to provide a digestible primer on trading algorithms.

An algorithm is “a set of instructions for solving a problem or accomplishing a task”²³; an “exact list of instructions that conduct specified actions step by step in either hardware- or software-based routines,” like a recipe.²⁴ “Algorithmic trading refers to the use of preprogrammed electronic instructions in trading securities or commodities.”²⁵ Simply distilled, there are two general buckets of algorithms: deterministic, or preset algorithms, and AI, or autonomous, algorithms.²⁶ Deterministic algorithms are pre-programmed, using “instructions to execute a specified trading strategy.”²⁷ The instructions act as parameters for how the algorithm will “respond to new data and change their strategies” according to the defined parameters.²⁸ The preprogrammed parameters “inform the algorithm when and how to act.”²⁹ As humans set the parameters, these algorithms are restricted by whatever knowledge and assumptions people build into them.³⁰

AI algorithms operate quite differently. Instead of receiving parameters within which they can operate, “[AI algorithms] are tasked with accomplishing a goal and left to figure out the

learning-algorithmic-trading-and-manipulation/#:~:text=Trading%20in%20financial%20markets%20is,are%20impossible%20for%20human%20being

²³ Lucas Downey, *What an Algorithm Is and Implications for Trading*, INVESTOPEDIA, <https://www.investopedia.com/terms/a/algorithm.asp> (last updated May 27, 2022).

²⁴ Alexander S. Gillis, *algorithm*, TECHTARGET, <https://www.techtargget.com/whatis/definition/algorithm> (last visited Dec. 20, 2022).

²⁵ Fletcher, *supra* note 13, at 287.

²⁶ *Id.* at 261.

²⁷ *Id.*

²⁸ *Id.*

²⁹ *Id.* at 287.

³⁰ *Id.*

best way to do it.”³¹ These algorithms learn through trial and error, adapting to new information and solving for the optimal path forward.³² This learning process is often referred to as the already mentioned ML, and ML unlocks algorithms’ ability to adapt to changing external conditions, some more or less autonomously.³³ A favorite recipe of trading firms is to use an ML-capable algorithm to sift through vast amounts of data in search of a newly discovered pattern or trading strategy.³⁴

But not all kinds of ML-capable algorithms are alike. There are three generally accepted levels of ML. First is “supervised learning” (“SL”), which is used for “regression and classification purposes.”³⁵ SL requires users to “train their algorithms with pre-labeled empirical data,” testing the algorithm’s outputs with already known results.³⁶ This iterative process allows the algorithm to develop rules, which the humans validate throughout the training process, that the people who designed the algorithm can eventually use in predictive trading.³⁷ For example, these “algorithms can use technical market indicators or other useful data to predict the next day’s winning and losing stocks from past observations yielded from empirical data.”³⁸

The second kind of ML is “unsupervised learning” (“UL”), which, through “clustering and factor analyses,” allows algorithms to “autonomously infer patterns” in data, not relying on pre-labeled empirical data that SL algorithms require.³⁹ Trading firms often employ UL and SL algorithms simultaneously, using the UL algorithm to analyze data sets and recognize patterns

³¹ *Id.* at 262.

³² *Id.* at 290.

³³ Azzutti, *supra* note 18, at 86–91.

³⁴ *Id.*

³⁵ *Id.* at 86.

³⁶ *Id.*

³⁷ *Id.*

³⁸ *Id.*

³⁹ *Id.*

that present trading opportunities, which the UL algorithm can share as “input data” to the SL algorithms to use in stock price prediction and trading.⁴⁰

The third kind of ML is “reinforcement learning” (“RL”), which allows algorithms to learn through trial and error “with the ultimate goal to realize a pre-defined objective or optimize a cost of utility function pursuant to that objective.”⁴¹ Said another way, RL “is the task of learning how agents ought to take sequences of actions in an environment in order to maximize cumulative rewards.”⁴² RL algorithms not only adapt to changing circumstances but can also consider their own behavior’s influence on an environment and conduct a “trade-off between ‘exploration’ and ‘exploitation.’”⁴³ RL algorithms closely resemble human characteristics in an algorithm and are heavily used in high-frequency trading.⁴⁴

There is another kind of ML distinct from the three mentioned above: deep learning (“DL”). DL is a recent sub-field of ML, and it uses neural networks in the form of a “succession of multiple processing layers.”⁴⁵ These “artificial neural networks” mimic a human’s neural network,⁴⁶ with each layer in the neural network transforming data to “learn[] different levels of abstraction.”⁴⁷ These layers between the inputs of what goes into a DL algorithm and the output that comes out are called “hidden” layers.⁴⁸ A significant advantage that DL, or the combination of DL and RL, known as deep reinforcement learning (“DRL”), is that a DL algorithm allows for “the application of a neural network to estimate the states instead of having to map every solution,

⁴⁰ *Id.* at 86–87.

⁴¹ *Id.* at 88.

⁴² Vincent Francois-Lavet, Riashat Islam, Joelle Pineau, Peter Henderson & Marc G. Bellemare, *An Introduction to Deep Reinforcement Learning*, 11 FOUNDATIONS & TRENDS IN MACH. LEARNING 219, 224 (2018).

⁴³ Azzutti, *supra* note 18, at 88.

⁴⁴ *Id.*

⁴⁵ FRANCOIS-LAVET, *supra* note 42, at 228.

⁴⁶ Azzutti, *supra* note 18, at 89.

⁴⁷ FRANCOIS-LAVET, *supra* note 42, at 228.

⁴⁸ *Id.*

creating a more manageable solution space in the decision process.”⁴⁹ Sometimes the possible decisions facing an RL algorithm are too complex and numerous for the RL algorithm to find the optimal reward path effectively.⁵⁰ An RL algorithm has to test every possible scenario through trial and error, using tabulation methods to track and store information learned from tested actions, whereas DL allows for approximating or “generaliz[ing] the value of states it has never seen before, or has partial information about, by using values of similar states.”⁵¹ This approximating power of DL algorithms is responsible for many “exciting advancements” in ML and AI.⁵²

The layers in artificial neural networks used by DL algorithms have implications beyond approximation. First, DL algorithms, whether used alone or in conjunction with other ML methods like SL and RL, can achieve “superior-to-human capabilities”⁵³ and genuine autonomy from human involvement.⁵⁴ The more layers a DL algorithm has, the greater its ability to deal with “high dimensional data” and “identify patterns on its own.”⁵⁵ A trading DRL algorithm can “take in very large datasets, find latent correlations thanks to deep learning, and learn to decide which actions to perform in order to optimize a function via RL in pursuit of a pre-defined objective.”⁵⁶ Because of their ability to deal with open-ended scenarios,⁵⁷ the applications of DL algorithms are expansive, and even further subvariants of DL algorithms—such as Q-network or

⁴⁹ Terri Williams, *Reinforcement Learning Vs. Deep Reinforcement Learning: What’s the Difference?*, TECHOPEDIA (Oct. 5, 2020), <https://www.techopedia.com/reinforcement-learning-vs-deep-reinforcement-learning-whats-the-difference/2/34039>.

⁵⁰ *Id.*

⁵¹ *Id.*

⁵² *Id.*

⁵³ Azzutti, *supra* note 18, at 91.

⁵⁴ *Id.*

⁵⁵ Williams, *supra* note 49.

⁵⁶ Azzutti, *supra* note 18, at 91.

⁵⁷ Williams, *supra* note 49.

Q-learning algorithms and quantum-enhanced algorithms⁵⁸—continue to expand the possibilities.⁵⁹ Second, the more layers and intricacies added to a DL-based algorithm, the less we understand it. Some neural networks have over 100 hidden layers transforming data between the input and output layers.⁶⁰ This is known as the “black box” problem,⁶¹ “where both the developers and users of AI may not fully understand and explain *why* and *how* their algorithms have generated a particular output given specific data input.”⁶² Many have raised concerns over entrusting black box algorithms with “decision-making in critical domains related to human life” when the algorithm’s decision-making process is not understood, for without understanding the process, it may be impossible to identify an algorithm misdeed, not to mention hold one accountable.⁶³

Using their black box nature, some autonomous algorithms created to “maximize profits” have created winning trading strategies, “which if engaged in intentionally by a human trader, would likely constitute manipulation.”⁶⁴ That is to say, to meet one broad objective, algorithms “learn to manipulate.”⁶⁵ Indeed, a recent experiment with two different algorithms employing DL techniques, one using a deep Q-network structure and the other a deep deterministic policy

⁵⁸ *Wall Street’s latest shiny new thing: quantum computing*, ECONOMIST (Dec. 19, 2020), <https://www.economist.com/finance-and-economics/2020/12/19/wall-streets-latest-shiny-new-thing-quantum-computing> (“In 2019 Google was the first to demonstrate ‘quantum supremacy,’ using a 53-qubit nisq machine to perform in minutes a calculation that would have taken the world’s fastest supercomputer more than 10,000 years.”)

⁵⁹ Azzutti, *supra* note 18, at 109–12.

⁶⁰ FRANCOIS-LAVET, *supra* note 42, at 230.

⁶¹ Zachary C. Lipton, *The Mythos of Model Interpretability: In Machine Learning, the Concept of Interpretability is Both Important and Slippery*, ACM QUEUE, May-June 2018.

⁶² Azzutti, *supra* note 18, at 90.

⁶³ *Id.*

⁶⁴ Shearer, *supra* note 22.

⁶⁵ Megan Shearer, Gabriel Rauterberg & Michael Wellman, *Learning to Manipulate a Financial Benchmark*, SSRN 17 (Sept. 14, 2022), <https://ssrn.com/abstract=4219227>.

gradient, showcased how quickly and similarly different DL algorithms can resort to market manipulation.⁶⁶

The experiment used simplified DRL algorithms in controlled environments and discovered how autonomous algorithms could manipulate the market. The experiment focused on benchmark manipulation.⁶⁷ “A financial benchmark is a summary statistic over market variables, such as prices of specified securities at designated times[,]” including references to asset value and interest rates, definitions of derivatives, and contract prices.⁶⁸ Benchmarks give “a concise reflection of market realities” and assist with financial decision making, but market participants also have positions in benchmarks, creating “incentives to try to influence or *manipulate* them.”⁶⁹ In the experiment at hand, the experimental autonomous algorithm engaged in high-frequency trading (“HFT”) in a market in which it also held contracts whose value was determined by a benchmark representing the market.⁷⁰ The algorithm lost value on its high-frequency trades, but it more than made up for that loss in value through gains obtained in its benchmark positions, the benchmark price it manipulated through HFT.⁷¹ Though some traders would have profited from the algorithms losing trades in the market, other traders who held opposite positions in the benchmark would have lost a greater amount, resulting in a net loss for traders who interacted with the algorithm.⁷² This experiment represented how DRL algorithms can learn to manipulate the market with “no other human-designed objective” other than to maximize profits.⁷³ Despite the ominous implications of this experiment, advocates of algorithms

⁶⁶ *Id.* at 2.

⁶⁷ *Id.*

⁶⁸ *Id.* at 1.

⁶⁹ *Id.*

⁷⁰ *Id.* at 1-2.

⁷¹ *Id.* at 2.

⁷² *Id.*

⁷³ Shearer, *supra* note 22.

and their potential when mixed with AI are undeterred. A significant reason may be the benefits algorithms have already bestowed on the markets.

III. IN DEFENSE OF ALGORITHMS

Before focusing on the problems with autonomous algorithms, it is important to acknowledge the incredible benefits derived from algorithmic trading. Algorithms fuel today's markets. Algorithms have provided "lowered trading costs, greater market accessibility, faster trade execution, and greater market efficiency and liquidity."⁷⁴ These benefits are largely why, in 2019, the amount of global equity assets managed passively through computers and algorithms surpassed the amount managed by humans.⁷⁵ Every day, about seven billion shares, or \$320 billion, are traded in U.S. stock markets, mostly in HFT conducted by algorithms.⁷⁶ "Four of the world's five largest [hedge funds]—Bridgewater, AQR, Two Sigma and Renaissance—were founded specifically to use quantitative methods," a form of algorithmic investing.⁷⁷

Considering lower trading costs, passive funds that rely on algorithms have management fees between 0.03-0.09%, which can be twenty times less than active managers.⁷⁸

Bringing back the wisdom of John Bogle shows the significance of this cost savings—he explained that paying a two percent management fee for 50 years on a fund that averages a seven percent return eats up almost two-thirds of the return.⁷⁹ Commissions for trades hover around

⁷⁴ Fletcher, *supra* note 13, at 262.

⁷⁵ *stockmarket is now run by computers*, *supra* note 14.

⁷⁶ *Id.*

⁷⁷ *Id.*

⁷⁸ *Id.*

⁷⁹ Marcela Gaviria & Martin Smith, *The Retirement Gamble*, PBS (Apr. 23, 2013), <http://www.pbs.org/wgbh/pages/frontline/retirement-gamble>.

\$0.0001 per share,⁸⁰ and due to this low cost, most mainstream brokerages—including Fidelity, TD Ameritrade, E*Trade, and Robinhood, among many more—charge nothing for consumers to trade.⁸¹ Present-day trading is “frictionless.”⁸²

The lower cost of trading has led to more market participants.⁸³ Retail investors can trade individual stocks or diversify through an ever-increasing mix of exchange-traded funds (“ETFs”) and passive index funds that operate through algorithms.⁸⁴ Competition spurred by these algorithm advancements is estimated to have “saved investors \$1 trillion or more in fees since 1975.”⁸⁵ Even more, these cost-savings and low barriers to entry are primed to expand beyond the stock market, creating the same kind of accessible, liquid markets in bonds, property, art, and other assets of which retail investors can take advantage.⁸⁶

Speed is the name of the game for trading algorithms, arguably the most crucial part of an algorithm’s trading strategy.⁸⁷ “The quicker a firm can reach the market with its intelligence, the more profit it stands to make.”⁸⁸ Even in 2012, a delay of milliseconds after a significant news event meant lost profits for traders.⁸⁹ Some firms can execute 100,000 trades in a second, and London and New York connected themselves via “a transatlantic fiber-optic line dubbed the Hibernia Express” to communicate 2.6 milliseconds faster.⁹⁰ Some speculate that, within the next

⁸⁰ *stockmarket is now run by computers*, *supra* note 14.

⁸¹ Chris Davis, *11 Best Online Brokers for Free Stock Trading of December 2023*, NERDWALLET (Nov. 1, 2023), <https://www.nerdwallet.com/best/investing/free-stock-trading>.

⁸² *A new epoch for retail investors is just beginning*, ECONOMIST (Feb. 6, 2021), <https://www.economist.com/finance-and-economics/2021/02/06/a-new-epoch-for-retail-investors-is-just-beginning>.

⁸³ *Id.*

⁸⁴ *Id.*

⁸⁵ *Id.*

⁸⁶ *Id.*

⁸⁷ Yesha Yadav, *The Failure of Liability in Modern Markets*, 102 VA. L. REV. 1031, 1065 (2016).

⁸⁸ *Id.*

⁸⁹ *Id.* at 1047.

⁹⁰ Mark Buchanan, *Physics in finance: Trading at the speed of light*, 518 NATURE 161, 161 (2015).

five years, financial markets may send information through neutrinos that “can travel at the speed of light and can go through obstacles, including Earth.”⁹¹ Time is money in financial markets driven by algorithms, and investment firms will do whatever it takes to gain an edge, a race entertainingly described in Michael Lewis’s *Flash Boys*.⁹² HFT strategies using algorithms reward informational advantage rather than skill in capital allocation.⁹³ Of course, the speed benefits are reaped mainly by the owners of the trading algorithms and whoever happens to have their money invested with them, for they win the game of “hot potato,” buying and selling for a gain before others have time to react.⁹⁴ But a speedy market also offers benefits to other market players.

Proponents of algorithmic trading argue that fast trading increases efficiency and liquidity for everyone while lowering volatility.⁹⁵ Trading “relatively expensive and slow humans with relatively cheap and fast machines” increases liquidity because it eliminates delays in completing a market transaction, meaning that a person can buy or sell instantly at the accurate market price.⁹⁶ Such “[a] constant flow of orders” keeps prices stable.⁹⁷

Since algorithms can process data and execute trades so quickly, information is priced into securities at rapid speed, adding to market efficiency.⁹⁸ In addition, algorithms that trade quickly also tend to trade heavily, as in HFT, serving as “an ever-ready counterparty to investors that wish to trade.”⁹⁹ Thus, algorithms act as information agents and market makers. But not

⁹¹ *Id.*

⁹² See generally MICHAEL LEWIS, *FLASH BOYS: A Wall Street Revolt* (2014).

⁹³ Pasquale, *supra* note 16, at 2092.

⁹⁴ Yadav, *supra* note 87, at 1050.

⁹⁵ Pasquale, *supra* note 16, at 2096–97.

⁹⁶ *Id.*

⁹⁷ *Id.*

⁹⁸ Yadav, *supra* note 87, at 1065–66.

⁹⁹ *Id.* at 1065.

everyone is fond of algorithmic trading. Critics point out that a primary purpose of financial markets has been to “pool diverse information from many people to channel investment resources,” something that “requires trading based on insight, depth of study and patience—all foreign to the high-frequency algorithm-based system.”¹⁰⁰

Moving on to autonomous algorithms, their potential brings tremendous upside and downside, though the upside may be confined to those who own the algorithms while all market participants will share the downside. Indeed, the benefits of algorithmic trading appear to lie in the past with more deterministic algorithms, while the problems with algorithmic trading appear poised to proliferate with the growth of more autonomous algorithms. One reason for the exclusivity of the potential benefits is that there is not much room left for efficiency gains.¹⁰¹ High-frequency traders using algorithms are making less profit than they used to,¹⁰² and consumers already enjoy the benefits of an efficient market. Perhaps, even, “there may be an optimal speed for trading today’s markets have already far surpassed.”¹⁰³

Thus, to keep providing new value, algorithms need to do more than get traders to the front of the line. Meanwhile, the amount of data available to analyze is growing exponentially, and the computing power necessary to analyze such vast amounts of data is also increasing.¹⁰⁴ Pairing autonomous algorithms with this enhanced computing capacity unlocks an ability to understand signals, relationships, and patterns in data “beyond the ability of humans.”¹⁰⁵ Those with the means to do so will race to gain any competitive advantage from autonomous

¹⁰⁰ Buchanan, *supra* note 90, at 162.

¹⁰¹ *Id.*

¹⁰² *Id.*

¹⁰³ *Id.* at 163.

¹⁰⁴ *Artificial Intelligence, Machine Learning and Big Data in Finance: Opportunities, Challenges, and Implications for Policy Makers*, OECD, at 21 (2021), <https://www.oecd.org/finance/financial-markets/Artificial-intelligence-machine-learning-big-data-in-finance.pdf>.

¹⁰⁵ *Id.*

algorithms, filling their own pockets while theoretically being able to provide more advanced financial services to consumers.¹⁰⁶ As discussed below, autonomous algorithms appear to be more of a zero-sum game than benevolent wealth providers, exacerbating the problems of current algorithms while creating an entirely new species of problems.

IV. PROBLEMS WITH (AUTONOMOUS) ALGORITHMS

Autonomous algorithms have the potential to bring problems that we may not comprehend well enough to combat. Along with issues created by deterministic algorithms, such as flash crashes and manipulative design, autonomous algorithms are difficult to understand and test, may increase the ease and effectiveness of illegal trading activity already conducted with algorithms, and have shown evidence of autonomous market manipulation.

A. Past Market Disruptions

Seemingly insignificant algorithms have caused market crashes and other systemic risks from operational failures, largely because the speed of algorithms can backfire.¹⁰⁷ Many are programmed similarly, so when the market gets too volatile, or some signal appears telling algorithms to back out of the market, they all do in a flurry simultaneously.¹⁰⁸

On May 6th, 2010, the market lost almost \$1 trillion of market value in minutes.¹⁰⁹ A mutual fund had initiated an order to sell over 75,000 futures contracts linked to the S&P 500,

¹⁰⁶ *Id.*

¹⁰⁷ Buchanan, *supra* note 90, at 162.

¹⁰⁸ *Id.*

¹⁰⁹ Katie Kolchin, *The 10th Anniversary of the Flash Crash*, SIFMA (May 19, 2020), <https://www.sifma.org/resources/research/10th-flash-crash-anniversary/>.

the value of which approached \$4.1 billion.¹¹⁰ The fund used an algorithm to complete this massive order, except the algorithm was not directed to consider price in this transaction.¹¹¹ Thus, it continued to unload the contracts as prices plummeted from a cascading effect of other firms' algorithms, including many HFT firms, responding to the activity with their trades, known as the "hot potato" effect.¹¹² In thirteen minutes, authorities initiated a circuit breaker to halt trading in the futures contract, and eventually, prices stabilized, but investors did not recoup all losses.¹¹³

Another faulty algorithm caused one firm to lose over \$460 million in 2012.¹¹⁴ Knight Capital Group, LLC, had inadvertently used an algorithm with outdated code to orchestrate its daily market-making activities.¹¹⁵ The improperly updated algorithm received 212 orders, and from those, "mistakenly streamed thousands of orders per second into the NYSE market over a 45 minute period; it executed over 4 million trades in 154 stocks totaling more than 397 million shares"¹¹⁶ In May 2022, a London trader working for Citigroup accidentally added an extra zero to an order, causing European markets to sell off through a similar cascading effect of algorithms responding to the error from the Citigroup trader and executing their trades.¹¹⁷ Citigroup lost \$50 million.¹¹⁸

¹¹⁰ Jacob Goldstein, *The Flash Crash, Explained*, NPR (Oct. 1, 2010, 5:41 PM), <https://www.npr.org/sections/money/2010/10/01/130272516/the-flash-crash-explained>.

¹¹¹ *Id.*

¹¹² CFI Team, *2010 Flash Crash*, CORP. FIN. INST., <https://corporatefinanceinstitute.com/resources/equities/2010-flash-crash/> (last visited Oct. 31, 2023).

¹¹³ *Id.*

¹¹⁴ John D'Antona Jr., *The Rise and Fall of Knight Capital – Buy High, Sell Low. Rinse and Repeat*, TRADERS MAG. (Sept. 10, 2019), <https://www.tradersmagazine.com/departments/brokerage/the-rise-and-fall-of-knight-capital-buy-high-sell-low-rinse-and-repeat-2/>.

¹¹⁵ *Id.*

¹¹⁶ *Id.*

¹¹⁷ Bryce Elder, *How should we police the trader bots?*, FIN. TIMES (Jun. 16, 2022), <https://www.ft.com/content/370c3c63-0c94-41f0-bf7a71072eeefbd?location=https%3A%2F%2Fwww.ft.com&multistepRegForm=multistep>.

¹¹⁸ *Id.*

Another problem manifests when deterministic or autonomous algorithms are not flawed but are “by-design” manipulative.¹¹⁹ Humans can code manipulation into algorithms or “teach, from historical examples or within simulated market environments, AI traders how to ‘discover’ manipulation while also guaranteeing the pursuit of a profit-maximizing business goal.”¹²⁰ One example of this occurred in 2009 when Athena Capital deployed a “bandit algorithm [named] ‘Gravy’ to manipulate explicitly,” getting the optimal position in the last moments of a trading day in book order imbalances, providing additional profits to the firm.¹²¹ Enforcement efforts against this kind of intentionally designed algorithmic manipulation are challenging because they require a high level of expertise and evidence of scienter on the part of the humans involved,¹²² a legal conundrum discussed further below.

B. Present and Future Difficulties: Opacity and an Expansion of Algorithmic Misdeeds

A host of factors make autonomous algorithms challenging to understand and test. One obstacle stands firmly in the way of effective examination—proprietary data. Most use and advancement of autonomous algorithms is “likely to emerge within investment firms’ proprietary projects, protected by intellectual property rights,” making analysis and comparison across algorithms nearly impossible for scientists and regulators.¹²³ This is one reason current financial research on ML and autonomous algorithms “has failed to provide a convincing scientific framework or even methodology to analyze different ML methods.”¹²⁴

¹¹⁹ Azzutti, *supra* note 18, at 117.

¹²⁰ *Id.*

¹²¹ *Id.*

¹²² *Id.* at 118.

¹²³ *Id.* at 93-94.

¹²⁴ *Id.*

Compounding the opacity problem is the reality that many autonomous algorithms are primed to exploit market manipulation techniques already used by non-autonomous algorithms, especially through the “massive market microstructure data” generated by HFT firms.¹²⁵ One example of an HFT manipulation strategy that autonomous algorithms could expand on is spoofing. “[S]poofing means bidding or offering for a trade in a futures contract, stock, or other financial instrument with the intent to cancel the bid or offer before the trade is executed.”¹²⁶ HFT firms spoof by placing and canceling massive amounts of orders in milliseconds using algorithmic trading systems, tricking the market into thinking there is liquidity in a specific security and allowing the spoofing firm to take advantageous positions in subsequent trading.¹²⁷ Autonomous algorithms can cut out the human element; some have already observed RL algorithms using spoofing techniques with no human nudging.¹²⁸

Another manipulation strategy ripe for autonomous algorithms is ping-pong, “where the aim is to detect hidden resting orders on books by ‘pinging’ markets in the quest for liquidity.”¹²⁹ This is also known as “whale hunting,” where an algorithm sends out orders to test the waters of the market; if the algorithm identifies someone about to buy or sell a large number of shares, the algorithm quickly executes its own large order, buying or selling the same position just before the other market participant, obtaining an artificially inflated profit by jumping the line.¹³⁰

¹²⁵ *Id.* at 99.

¹²⁶ Gregory Scopino, *Preventing Spoofing: From Criminal Prosecution to Social Norms*, 84 U. Cin. L. Rev. 1069, 1071 (2016).

¹²⁷ *Id.*

¹²⁸ Azzutti, *supra* note 18, at 99.

¹²⁹ *Id.*

¹³⁰ Pasquale, *supra* note 16, at 2092.

Yet another strategy is “momentum ignition,” where “the aim is to anticipate and initiate a sharp price trend on markets to attract other algorithmic traders to trade on the same asset.”¹³¹ AI algorithms in this arena can lead to “optimized deceptive strategies.”¹³² Extensive research is going into spotting trends in complicated markets, so it is plausible that autonomous algorithms and those using them would use what they discover and exploit strategies such as momentum ignition.

Perhaps the umbrella concept under which to categorize all of these manipulative strategies is “latency arbitrage”—the embodiment of HFT strategy—where HFT firms “take advantage of a temporary knowledge advantage to anticipate where the market is going (even if the price movement is very slight) and act accordingly.”¹³³ All of the strategies above rely on an informational advantage. What autonomous algorithms seem primed to do is to take this one step further; rather than speculate on future market conditions, they can influence or create the future market conditions from which they want to profit. This phenomenon does not create value or societal wealth. It redistributes wealth through information asymmetry abuse and misrepresentations to those who control the algorithms. As explained above, introducing DL techniques in financial algorithms allows algorithms to tackle broader strategies, such as “cross-market and cross-asset manipulation strategies.”¹³⁴ This is precisely what happened in the benchmark manipulation experiment with the two different DRL algorithms discussed above. And why stop at infiltrating one market or a few assets? Rapid autonomous algorithm development and increases in computing power may lead to capabilities to monitor and influence

¹³¹ Azzutti, *supra* note 18, at 100.

¹³² *Id.*

¹³³ Pasquale, *supra* note 16, at 2093.

¹³⁴ Azzutti, *supra* note 18, at 100.

several markets and trading venues at once.¹³⁵ Plus, the scope of algorithm use need not be confined to the capital markets; many algorithms may engage in information-based manipulation outside the markets to influence prices in the direction they desire, such as through media and internet tampering.¹³⁶

Whether or not the legal system is ready for it, ample evidence exists that autonomous algorithms can, have, and will manipulate financial markets. Using simple algorithms, another study proved that “[i]n a duopoly with homogeneous products, whenever pricing algorithms can decode their rivals’ strategies and thus revise and align strategies in response, collusion is the inevitable outcome.”¹³⁷ Such collusion may look like “alter[ing] artificially the price of one or more financial instruments or [sic] influenc[ing] natural forces of market activity with deceptive means to induce other investors to trade.”¹³⁸ Indeed, algorithm manipulation has moved from theoretical to the courtroom, with ongoing litigation occurring on the matter.¹³⁹

V. CURRENT REGULATORY APPROACH OF AUTONOMOUS ALGORITHMS

The regulatory frameworks currently in operation for autonomous algorithms are inconsistent and inadequate. Most use some combination of requiring transparency and disclosure of algorithmic trading systems by firms, risk management and oversight systems by exchanges, and tips from market participants of improper algorithmic activity to aid enforcement

¹³⁵ *Id.* at 100-01.

¹³⁶ Shearer, *supra* note 65, at 3.

¹³⁷ Azzutti, *supra* note 18, at 109.

¹³⁸ *Id.* at 95.

¹³⁹ *Id.* at 97.

by regulators.¹⁴⁰ Though different in structure, all frameworks appear to lack effective enforcement.

A. Regulatory Frameworks

The least ineffective model of algorithm regulation exists in the European Union, guided by the *European Securities and Markets Authority* (“ESMA”).¹⁴¹ Looking at trading firm requirements, firms using algorithmic trading must provide some information regarding their operations to exchanges and regulators, such as the algorithmic systems and trading strategies that they will use, and they may have to provide more specific information if pressed further by regulators, who tend to scrutinize HFT firms more closely.¹⁴² Firms are also supposed to conduct “enterprise risk management,” focusing on “testing, validation, and deployment” of algorithms, though confirmation of firms fulfilling these requirements is monitored through “annual self-assessment report[s].”¹⁴³ Firms are also supposed to surround their algorithmic trading activity with internal controls, a complex and expensive task that only a few experts can do as algorithms increase in complexity and opacity.¹⁴⁴ And again, the difficulty is compounded even further by asking a regulator with a severely restricted outside viewpoint to determine whether a firm’s internal control experts have effectively controlled their algorithms.

Sticking with Europe, exchanges have obligations to control algorithms. These comprise more system-wide measures, using tools like circuit-breakers and providing simulated

¹⁴⁰ *Id.* at 122–26.

¹⁴¹ *See id.* at 122, n.158.

¹⁴² *Id.* at 123–27.

¹⁴³ *Id.*

¹⁴⁴ Dirk A. Zetsche, Douglas Arner, Ross Buckley & Brian W. Tang, *Artificial Intelligence in Finance: Putting the Human in the Loop*, 43 SYDNEY L. REV. 43 (2021).

environments where firms can test new algorithms and their ability to follow market rules.¹⁴⁵ Like firms, exchanges substantiate all of these efforts mostly through self-reporting, the validity of which is highly questionable given that exchanges have a competitive incentive to attract firms to their exchanges rather than impose strenuous oversight.¹⁴⁶ Sometimes the firm and exchange are one in the same, such as when a trading firm operates a dark pool trading venue while its own algorithms trade in the pool,¹⁴⁷ a scenario that assuredly leads to an honest and detailed self-reporting structure. To hold these self-reporting market participants in check, regulators have minimal impact and depend on whistle-blowers and assistance from market players to identify possible foul play.¹⁴⁸

The United States employs a regulatory framework similar to Europe, though perhaps more convoluted. It focuses on registration and supervision, carried out primarily by the SEC and Commodity Future Trading Commission (“CFTC”).¹⁴⁹ In line with the registration rules that the SEC and CFTC use before issuers are allowed to sell securities to the public, the SEC and its self-regulatory organization (“SRO”), the Financial Industry Regulatory Authority (“FINRA”), have created algorithmic-specific rules requiring registration and supervision of firms using algorithms.¹⁵⁰ “[U]nder FINRA Rule 1220, two categories of persons must register as a “Securities Trader” and pass a qualifying examination: (1) those responsible for the design, development, or modification of an algorithmic trading program and (2) those responsible for the

¹⁴⁵ Azzutti, *supra* note 18, at 123–27.

¹⁴⁶ *Id.*

¹⁴⁷ Danny Busch, *MiFID II: Regulating High Frequency Trading, Other Forms of Algorithmic Trading and Direct Electronic Market Access*, 10 L. & FIN. MKTS. REV. 72, 75 (2016).

¹⁴⁸ Azzutti, *supra* note 18, at 125.

¹⁴⁹ Gina-Gail S. Fletcher & Michelle M. Le, *The Future of Ai Accountability in the Financial Markets*, 24 VAND. J. ENT. & TECH. L. 289, 308 (2022).

¹⁵⁰ *Id.*

day-to-day supervision and monitoring of algorithmic trading.”¹⁵¹ The rule is supposed to help regulators identify those who understand and are responsible for an algorithm’s behavior, “both the design of the intended trading strategy . . . and the technological implementation of such strategy,” so that regulators can determine whether an algorithm “is designed . . . to achieve . . . regulatory compliance.”¹⁵²

Registered traders must also implement a “reasonable supervision and control program,” and FINRA provides recommendations as to what these internal controls should look like, including holistic trading strategy reviews, intra-firm risk committees assessing algorithmic trading risks, and algorithm testing and validation to achieve legal compliance.¹⁵³

In the commodities arena, the CFTC is similarly principle-focused and flexible like the SEC.¹⁵⁴ It uses “risk principles” to monitor algorithmic trading in commodities.¹⁵⁵ These principles prescribe “(1) rules to prevent, detect, and mitigate market disruptions; (2) risk controls; and (3) notification of the CFTC of significant market disruptions.”¹⁵⁶ This strategy is predominantly supervision, trusting exchanges to create rules as necessary as technology advances and needs arise.¹⁵⁷ With the SEC and CFTC choosing a flexible tone at the top and trusting market players beneath them to properly manage innovation, plenty of room exists for markets to experiment.¹⁵⁸ The cost: “[a] principles-only approach can be so amorphous that it ultimately regulates nothing.”¹⁵⁹ Reliance on SROs like FINRA and National Securities

¹⁵¹ *Id.*

¹⁵² *Id.*

¹⁵³ *Id.*

¹⁵⁴ *Id.* at 309.

¹⁵⁵ Electronic Trading Risk Principles, 86 Fed. Reg. 2048, 2048, 2072 (Jan. 11, 2021) (to be codified at 17 C.F.R. pt. 38).

¹⁵⁶ Fletcher & Le, *supra* note 149, at 309.

¹⁵⁷ *Id.*

¹⁵⁸ *Id.* at 310–11.

¹⁵⁹ *Id.* at 309–10.

Exchanges reduces regulatory costs and places some of the regulatory obligations on the industry itself, but the other side of that coin brings unavoidable conflicts of interest to the entities that are supposed to self-regulate their self-interest.¹⁶⁰ Unsurprisingly, enforcement measures under this framework are lacking.

B. Enforcement

Regulators have an arduous task bringing enforcement actions when algorithms manipulate. The credible threat of enforcement—whether through imposing “fines, penalties, cease and desist orders, consent orders, license revocation, as well as the ability to institute informal enforcement actions or formal actions such as administrative proceedings and civil actions”¹⁶¹—is a necessary lever to deter and ensure compliance. More specifically, the SEC will ban bad actors, catch fraudsters before too much investor money is lost, and force market manipulators to return funds to investors.¹⁶² The SEC has used these tools against algorithms in the past; for example, it charged individual investment advisors when they covered up an error in one of their quantitative algorithm model’s risk controls that led to \$217 million in investor losses.¹⁶³ The SEC also went after Wealthfront Advisers LLC in 2011 for an unintentional algorithm error—about one-third of the time, the firm’s detection algorithm failed to identify circumstances in which investors could use a tax-loss harvesting strategy, counter to the firm’s advertisements that promised better performance by its investment products.¹⁶⁴

¹⁶⁰ *Id.* at 310–11.

¹⁶¹ *Id.* at 312.

¹⁶² *Id.*

¹⁶³ Press Release, SEC Charges AXA Rosenberg Entities for Concealing Error in Quantitative Investment Model (Feb. 3, 2011), <https://www.sec.gov/news/press/2011/2011-37.htm>.

¹⁶⁴ *Robo Advisor Wealthfront Sanctioned by SEC*, CONVEX LEGAL (Jan. 16, 2019), <https://convexlegal.com/sec-sanctions-robo-adviser-wealthfront>.

But realistically, regulators can only go after the worst cases of market manipulation, let alone algorithm misdeeds, because of the “resource differential between cash-strapped agencies and prosecutors on the one hand and financial firms on the other.”¹⁶⁵ And a resource imbalance is not the only problem. Automation and liability are an incongruent pairing, a problem currently facing the regulatory framework surrounding the financial markets. The current regulatory framework lacks a legal model that fits algorithms, a massive issue only exceeded by the difficulty of detecting fraudulent algorithm activity.

As stated above, in the United States, the primary regulators of the markets are the SEC, the CFTC, FINRA, and to an extent, the NYSE and NASDAQ exchanges.¹⁶⁶ When taking action against bad actors, these regulators target three types of liability: intentional behavior, negligence, and strict liability¹⁶⁷—all three present challenges when applied to algorithms, as discussed below.

Liability for intentional behavior, such as fraud and manipulation, usually manifests as a violation of Rule 10b-5 of the Securities Exchange Act of 1934 and other parts of Section 10(b) and Section 9.¹⁶⁸ Breaches of these anti-fraud provisions, including “harmful schemes designed to manipulate markets,” require bad actors to pay back profits from the fraud, though these cases are often settled.¹⁶⁹ “[M]arket manipulation refers to any conscious attempt to interfere with the free and fair nature of trading activity, which must characterize the ordinary functioning of capital markets.”¹⁷⁰ Most cases alleging market manipulation are brought by regulators—rather

¹⁶⁵ Pasquale, *supra* note 16, at 2113.

¹⁶⁶ Yadav, *supra* note 87, at 1050.

¹⁶⁷ *Id.* at 1051.

¹⁶⁸ *Id.*

¹⁶⁹ *Id.*

¹⁷⁰ Azzutti, *supra* note 18, at 95.

than other avenues such as class action suits—given the demanding standards for bringing manipulation claims.¹⁷¹ On those tough standards, generally, manipulation requires deliberate misconduct, known as scienter.¹⁷² Sometimes the intent to manipulate can be easy to prove, such as when people engage in “outright lying to amplify securities prices, illusory wash or spoof trades, or open collusion between major traders to fix prices.”¹⁷³ What is more difficult to police is when activity is “facially legitimate” but manipulative underneath—case in point, a hard-to-understand and conscienceless algorithm.¹⁷⁴

The intent to manipulate is difficult, if not impossible, to assign to an algorithm.¹⁷⁵ This reality may appear counterintuitive, as all algorithmic transactions create an electronic paper trail, and authorities can inspect algorithmic programming based on signs of manipulation.¹⁷⁶ However, a paper trail—if decipherable—is worthless when manipulation is not built explicitly into the design of the algorithm. Though an algorithm may be created to engage in “market making, arbitrage, information trading—deliberately disruptive behavior can be a rational strategy” for the algorithm.¹⁷⁷ Simpler still, if a human creates an algorithm to maximize profits with no other constraints, the algorithm does not intend to manipulate, but it will manipulate if it determines that the optimal way to maximize profits is through manipulating the market.¹⁷⁸ In this scenario, Rule 10b-5 does not seem to apply because neither the algorithm nor those who made it show any deliberate intent to manipulate the market.¹⁷⁹ The problem grows as

¹⁷¹ Yadav, *supra* note 87, at 1052.

¹⁷² Azzutti, *supra* note 18, at 119.

¹⁷³ Yadav, *supra* note 87, at 1053.

¹⁷⁴ *Id.*

¹⁷⁵ Shearer, *supra* note 22.

¹⁷⁶ Yadav, *supra* note 87, at 1074.

¹⁷⁷ *Id.* at 1075.

¹⁷⁸ *See* Shearer, *supra* note 65.

¹⁷⁹ Yadav, *supra* note 87, at 1075.

algorithmic trading becomes more widespread and market disruptions from algorithms are anticipated and planned for by other investors, perhaps even programming their algorithms to take into account the actions of other algorithms.¹⁸⁰

Considering negligence, it is a difficult standard to apply to algorithms and their creators since they are engaging in predictive behavior, an inherently imperfect practice.¹⁸¹ Under that reality, regulators are faced with applying either a lenient or stringent reasonableness standard to disruptive market behavior;¹⁸² said another way, regulators must choose between a runaway moral hazard or saddling markets' operational efficiency with overly burdensome oversight.

Considering strict liability, its current role in securities laws is mostly confined to “minor technical breaches or foundational harms” that are easy to prove and enforce, a stark contrast to tort law generally that “reserve[s] the punishment of strict liability for the most harmful and dangerous offenses.”¹⁸³ Again, at first glance, strict liability is another liability standard that would appear to fit well with regulating algorithmic trading, for it makes sense to apply a strict standard to severe wrongdoing, and it eliminates the need for regulators to prove legal concepts related to conduct as is required of intentional behavior and negligence.¹⁸⁴ But continuing the trend of liability standards not fitting with algorithms, strict liability has its own problems. Strict liability makes sense when those at risk of being liable can “anticipate[] and control[]” for it beforehand, but with algorithms, even those created with the utmost care contain an element of unpredictability when they are deployed into complex financial markets.¹⁸⁵ A reasonably

¹⁸⁰ *Id.* at 1075–76.

¹⁸¹ *Id.* at 1077.

¹⁸² *Id.* at 1078.

¹⁸³ *Id.* at 1061.

¹⁸⁴ *Id.*

¹⁸⁵ *Id.* at 1082.

conceived algorithm may make a small error that extrapolates to a market collapse. The algorithm creator would be liable, even though that person could not have done anything more to negate the risk.¹⁸⁶ Worse yet, whoever creates a market-wide disruption will likely be unable to compensate for the damage, as one person or firm would not have the resources to pay back the value lost in a market-wide crisis.¹⁸⁷ Finally, such a regime would likely incentivize risky behavior, as whether one uses a simple and seemingly safer trading strategy or a complicated, high-risk, high-reward strategy, that person is subject to strict liability either way if they make an error, making the high-risk strategy a rational choice.¹⁸⁸ Despite these issues, not everyone sees these particularities with a strict liability system applying to algorithms as problematic.¹⁸⁹

A reasonable conclusion from the discussion above is that the regulation of algorithmic trading is inconsistent and ineffective. Another reasonable conclusion is that as algorithms continue to evolve and autonomous algorithm use becomes more widespread, the dangers threatening the integrity of our capital markets will increase while our ability to regulate algorithms will not improve. Thus, rather than hoping for regulation to surpass algorithmic innovation magically, it makes more sense to ban some autonomous algorithms from capital markets.

VI. THE SOLUTION TO AUTONOMOUS ALGORITHMS IN CAPITAL MARKETS: BANNING DL

ALGORITHMS

¹⁸⁶ *Id.* at 1083.

¹⁸⁷ *Id.*

¹⁸⁸ *Id.* at 1083–84.

¹⁸⁹ See Karni A. Chagal-Feferkorn, *Am I an Algorithm or A Product? When Products Liability Should Apply to Algorithmic Decision-Makers*, 30 STAN. L. & POL'Y REV. 61, 64 (2019).

Algorithmic trading crosses a line once market participants move from SL, UL, and RL techniques to DL techniques in trading algorithms. The hidden layers that cause the black box problem within DL algorithms jumble understanding and stymie regulation, and thus, regulators should ban any algorithm containing DL processes from capital markets. Vague, principled, idealistic regulatory aspirations do nothing against evolving, intricate, incomprehensible algorithms. Instead of dreaming about how we hope to regulate someday, preserving the integrity of today's capital markets demands concrete action now. We should draw the line at disallowing DL because that is where the hidden layers that cause the black box problem begin. RL also appears to go too far in some circumstances, especially when RL algorithms arrive at unexpected conclusions, but RL is pervasive at this point, so its automated repetition techniques are likely here to stay, and focusing on DL reduces disruption to current market customs. But something can be done to prevent the proliferation of DL techniques, whose unchecked growth may open a Pandora's Box in the capital markets. DL algorithms should be banned because they are impossible to regulate effectively, the potential benefits are over-stated and represent a zero-sum game, and the potential costs are societal in scale. To achieve this ban, it will likely be necessary to loosen proprietary protections on firms' algorithmic strategies and provide severe consequences for those who violate the ban.

A. Impossible to Regulate

“AI is complex and ever-changing, rendering some forms of backward-looking regulations obsolete before they have a chance to be enacted.”¹⁹⁰ Whether it is keeping up with

¹⁹⁰ Fletcher & Le, *supra* note 149, at 304.

self-driving cars, digital health innovations, or drones, regulators struggle to keep up with new technologies.¹⁹¹ Black box algorithms are no different, except that they may possess a heightened level of complexity. Any solution that regulators create for the types of ML most commonly in use now—such as SL, UL, and RL—will likely not work “for newer AI technologies that leverage deep learning techniques, such as generative adversarial neural networks and capsule networks.”¹⁹² Trying to outpace autonomous algorithm innovation with even further forward-looking innovation is an exercise in futility. Counting on regulation to leapfrog private firm innovation in the AI realm is a cross-our-fingers-and-hope solution.

Even without AI’s presence, financial regulation is not easy. Consider the following: “The exploitation of regulatory inconsistencies is a major impetus for financial innovation. Indeed, it might be the primary impetus. There is a strong incentive to innovate around prohibited or disadvantaged transactions. These innovations are commonly referred to as regulatory arbitrage.”¹⁹³ Regulatory inconsistencies when trying to evolve regulation to keep up with black box algorithms rapidly is inevitable, resembling a constant game of cat and mouse that DL algorithms will likely win, while a strict ban of DL algorithms strives to keep mice out of the house altogether. Regulatory inconsistencies will also abound in attempts to permissively regulate black box algorithms because there is no agreed-upon approach to solve the problem, and the likelihood of convergence on one common framework is slim to none. Some say we should recognize algorithms as separate legal entities, though no jurisdictions currently do.¹⁹⁴

¹⁹¹ William D. Eggers, Mike Turley & Pankaj Kamleshkumar Kishnani, *The Future of Regulation: Principles for Regulating Emerging Technologies*, DELOITTE (Jun 19, 2018), <https://www2.deloitte.com/us/en/insights/industry/public-sector/future-of-regulation/regulating-emerging-technology.html>.

¹⁹² Fletcher & Le, *supra* note 149, at 315.

¹⁹³ Michael S. Knoll, *The Ancient Roots of Modern Financial Innovation: The Early History of Regulatory Arbitrage*, 87 OR. L. REV. 93, 94 (2008).

¹⁹⁴ Azzutti, *supra* note 18, at 119.

Indeed, compared to a corporation, which is granted personhood but cannot act independently of humans, an AI algorithm can act entirely through its decision-making.¹⁹⁵ But problems arise if one imputes blame to an AI algorithm without “consciousness or free will,”¹⁹⁶ and beyond being judgment proof, holding AI algorithms themselves liable may immunize the firms that created them,¹⁹⁷ leaving no effective recourse for those harmed. On the other side of the spectrum, others think we can rely on the human-in-the-loop approach, meaning that as long as a person is involved in all AI decision-making processes, there is a human to which liability can be attached.¹⁹⁸ Unfortunately, this approach is already outdated, for it relies on existing legal frameworks and liability theories¹⁹⁹ and does not address the problem of what happens when an algorithm pursues a destructive path despite the humans involved exercising every best practice of the time.

Still, other theories include strict liability under tort law or product liability theories.²⁰⁰ Others believe that a collaborative approach using regulatory sandboxes—“a novel authorization regime”—solves all problems because testing algorithms extensively before unleashing them into the market will catch and remediate all problems beforehand.²⁰¹ Proponents note that “[u]sing a simulated market allows [incorporation of] complex details of market microstructure, representing the actual mechanics of trade, interactions among market participants, and the structure of the market.”²⁰² However, while useful for experiments, and no matter how

¹⁹⁵ John Lightbourne, *Algorithms & Fiduciaries: Existing and Proposed Regulatory Approaches to Artificially Intelligent Financial Planners*, 67 Duke L.J. 651, 674 (2017).

¹⁹⁶ Azzutti, *supra* note 18, at 120.

¹⁹⁷ Lightbourne, *supra* note 195, at 676-77.

¹⁹⁸ Azzutti, *supra* note 18, at 120.

¹⁹⁹ *Id.*

²⁰⁰ Karni A. Chagal-Feferkorn, *Am I an Algorithm or a Product? When Products Liability Should Apply to Algorithmic Decision-Makers*, 30 STAN. L. & POL'Y REV. 61 (2019).

²⁰¹ Azzutti, *supra* note 18, at 130.

²⁰² Shearer, *supra* note 65, at 1.

comprehensive the simulation, simulations cannot guarantee predictable performance in reality. One reason is the phenomenon of “overfitting,” “the problem that models are too specific to training data that can generalize poorly on new datasets; as such, developers cannot safely apply overfitt[ed] models in real markets.”²⁰³

There are numerous ideas on regulating black box algorithms and plenty of calls for “the matter [] to be put on the interdisciplinary research agenda bridging financial law, economics, and informatics.”²⁰⁴ But again, black box algorithms are here now, and a feasible regulatory solution is neither apparent nor agreed upon. “[C]redible and effective deterrence of wrongdoing requires certainty of punishment, which is increasingly unattainable with respect to algorithmic manipulation under the existing legal regime,”²⁰⁵ especially when black-box algorithms use “strategies that human traders could not even conceive.”²⁰⁶ Banning DL algorithms will make punishment more certain and likely create a more substantial deterrent effect against using manipulative DL trading strategies.

B. No Real Benefits

Kind of like the black box algorithms themselves, the benefits of black box algorithms are hard to picture and understand. Proponents of AI algorithms do not specify many concrete advantages that they bring other than efficiency, noting that bans or strict liability measures “could indeed impair innovation, thus losing out on several potential efficiency gains” of AI

²⁰³ Azzutti, *supra* note 18, at n. 35.

²⁰⁴ *Id.* at 122.

²⁰⁵ Fletcher, *supra* note 13, at 260.

²⁰⁶ Azzutti, *supra* note 18, at 121.

algorithms.²⁰⁷ But markets are already highly efficient, and it appears there is little more to gain in efficiency. In fact, some, like Joseph Stiglitz, a Nobel laureate in economics, believes that “rapid trading is socially useless” and notes that HFT firms, who would be the market players using these advanced AI algorithms, cancel “about 95% of the orders they make”²⁰⁸ anyway, doing little to create real value or efficiency in the market. AI for trading is not AI for medical or climate research; it is more like a zero-sum game that reallocates the pie rather than expanding it. While companies underlying the securities that these autonomous algorithms trade deliver valuable products and services to society, autonomous trading algorithms sit on the sideline, looking to profit from latency arbitrage, whether fairly or artificially created. Innovation of AI algorithms means innovation for their owners’ sake, finding new ways to gain informational advantages. Someone’s gain, AI algorithm owners, comes at the expense of someone else’s loss, non-AI owner market participants. They create an inequitable market and only serve their creators until, maybe, they go rogue.

A common sentiment among black box algorithm commentators is that black box algorithms must be handled with care, but policy should never stifle innovation. Statements like the following appear to be a mandatory qualifier when discussing black box algorithm regulation: “The preeminent issue is how to protect citizens and ensure fair markets while letting innovation and businesses flourish”²⁰⁹; “more cautious market actors may decide not to launch and may curb innovation altogether, fearing the risk of regulatory uncertainty”²¹⁰; and “[o]ne of the chief tasks for policymakers and regulators in coming years centers on how best to upgrade a twentieth-century financial infrastructure for the financial innovations of the twenty-first century,

²⁰⁷ *Id.* at 127.

²⁰⁸ Buchanan, *supra* note 90, at 162.

²⁰⁹ Eggers, *supra* note 191.

²¹⁰ Le, *supra* note 149, at 315.

like high-frequency trading and algorithmic wealth management.”²¹¹ It is worth remembering that “the SEC has a three-part mission: (1) protect investors, (2) maintain fair, orderly, and efficient markets, and (3) facilitate capital formation.”²¹² Protecting the development of black box algorithms without the means to regulate them effectively seems directly adverse to investor protection and the maintenance of fair and orderly markets. Innovation is not a stated goal of the SEC, and it should not outweigh the policy concerns that the SEC and U.S. regulators generally oversee. Innovation should only exist in capital markets when it serves the public interest, including investor protection and market integrity.

C. Real Costs

Though “invisible hand” is mentioned once in Adam Smith’s lengthy *The Wealth of Nations*,²¹³ it became the focal point of subsequent book interpretations in most economic schools of thought.²¹⁴ Similarly, it may only take one effective black box algorithm to create a new “invisible hand” that guides the markets in the direction it wishes. This may sound like dramatic rhetoric, but everything is on the table with autonomous algorithms. As others have said, “[o]ne bad algorithm and you’re at war.”²¹⁵ As a result, “[t]rustworthiness is also a prerequisite for [AI’s] uptake.”²¹⁶ Unfortunately, the combination of black box algorithm

²¹¹ Tom C.W. Lin, *The New Market Manipulation*, 66 EMORY L.J. 1253, 1277 (2017).

²¹² *The Role of the SEC*, U.S. SECURITIES AND EXCHANGE COMMISSION, <https://www.investor.gov/introduction-investing/investing-basics/role-sec#:~:text=The%20U.%20S.%20Securities%20and%20Exchange,Facilitate%20capital%20formation> (last visited Jan. 29, 2023).

²¹³ ADAM SMITH, *THE WEALTH OF NATIONS* 423 (1776).

²¹⁴ Freakonomics Radio, *Was Adam Smith Really a Right-Winger?*, FREAKONOMICS RADIO NETWORK (Dec. 15, 2022), <https://freakonomics.com/podcast/was-adam-smith-really-a-right-winger/>.

²¹⁵ Jenna McLaughlin, *Artificial Intelligence Will Put Spies Out of Work*, FOREIGN POL’Y (Jun. 9, 2017, 2:37 PM), [https://foreignpolicy.com/2017/06/09/artificial-intelligence-will-put-spies-out-of-work-too/\(quoting Justin Cleveland\)](https://foreignpolicy.com/2017/06/09/artificial-intelligence-will-put-spies-out-of-work-too/(quoting%20Justin%20Cleveland)).

²¹⁶ *White Paper on Artificial Intelligence—A European Approach to Excellence and Trust 1*, COM (Feb. 19, 2020).

complexity and their intended use in capital markets render them inherently untrustworthy. A rogue black box algorithm may create widespread and long-lasting damage to investors, whether through market failure or disruptive events that hit investors with unrecoverable financial losses or even more insidious, under-the-radar market manipulation that continually steals from investors' potential gains.

In figuring out how to deal with different algorithmic systems, the German Data Ethics Commission developed a “risk-adapted regulatory approach” that recommends placing stricter regulations on algorithms as their potential for harm increases.²¹⁷ It created “five levels of criticality” for measuring potential harm.²¹⁸ Level 1 captures algorithms with “zero or negligible potential for harm,” while Level 3 captures those with “regular or significant potential for harm” and recommends licensing procedures as safeguards.²¹⁹ At Level 5, the top level, the Commission captures algorithms “with an untenable potential for harm,” suggesting a complete or partial ban of such algorithms.²²⁰ Black box algorithms fit this level of risk categorization, and untenable is a fitting description of their threat in markets. It is not just the harm that they pose to the everyday investor but the unlikelihood that market participants or regulators could detect black box algorithm manipulation and the unlikelihood of regulators being able to bring a successful enforcement action given the burden of proof and the unanswered question of which legal framework applies to these algorithms. One can imagine algorithms in other settings that may seem to pose a more immediate risk than some AI algorithms profiting off of trades due to their informational advantage. But the obscurity of black box algorithms in the capital markets

²¹⁷ OPINION OF THE DATA ETHICS COMMISSION – EXECUTIVE SUMMARY, DATA ETHICS COMMISSION OF THE GERMAN FEDERAL GOVERNMENT 20 (Oct. 2019), https://assets.contentstack.io/v3/assets/blt3de4d56151f717f2/blt300ce23c9789e0f3/5e5cfe13fa08326331360f93/191023_DEK_Kurzfassung_en_bf.pdf.

²¹⁸ *Id.*

²¹⁹ *Id.*

²²⁰ *Id.*

magnifies their potential harm. These algorithms need not destroy the market's integrity through a catastrophic event or system failure, though that is a possibility. The pressing danger is the potential hijacking of market free will from right beneath our feet while we blindly throw our money into the system, just as the algorithm predicted we would or nudged us to do.

D. Considerations for Implementing the Ban

Implementing a ban on DL algorithms in trading will require some adjustments by firms and regulators. For one thing, some loosening of firm proprietary protections likely will need to occur to allow for sufficient algorithm code inspection by regulators. SEC staff already examine firms' internal controls surrounding their algorithmic trading platforms,²²¹ and it would not be unreasonable to allow a closer examination of firm algorithms. The benefit of drawing a bright line between DL algorithms and other types of ML algorithms is that differentiating between the kinds of algorithms should be possible at a general level, for their underlying functions, equations, and processes are distinct to the knowledgeable expert,²²² preserving the privacy of trading firms' algorithm intricacies. DL algorithms uniquely possess the neural networks and hidden layers that constitute a DL algorithm, so not only should regulators know what they are looking for, trading firms should know what kind of algorithms do not comply with the ban. More refinement of this process is needed to refine the scope of inspection and other considerations, such as whether third-party auditors could play a role.

²²¹ U.S. SECURITIES AND EXCHANGE COMMISSION, STAFF REPORT ON ALGORITHMIC TRADING IN U.S. CAPITAL MARKETS, 64–66 (Aug. 5, 2020), https://www.sec.gov/files/Algo_Trading_Report_2020.pdf.

²²² See generally FRANCOIS-LAVET, *supra* note 42, at Chapters 2 and 3.

Further, when regulators discover the improper use of black box algorithms, they should be empowered to impose harsh penalties to maximize the deterrent effect of the ban. Civil penalties for insider trading allow for disgorgement of up to three times the profit earned from an insider trading violation and the possibility of steep fines and lengthy imprisonment if someone is criminally convicted of insider trading.²²³ Even more, the SEC has imposed lifetime bans on business executives for their misdeeds, preventing them from working at publicly traded companies indefinitely.²²⁴ Serious punishments like these should be at the SEC's full disposal when dealing with traders using DL algorithms. Finally, regulators should use DL algorithms to identify the use of DL algorithms in the market. Though these algorithms pose a danger when used in the market, their risk to the public is negligible when performing a regulatory detection function. Identifying the use of DL algorithms by traders will not be an easy task and will likely require some combination of regular audits, whistleblowers, and catching DL algorithm activity in the market. As such activity will likely be subtle, nuanced, and rapidly evolving, the best method to catch DL algorithms will likely be a DL algorithm.

VII. CONCLUSION

Algorithms are integral to the operation of capital markets. Over time, the increased use of algorithms helped bring low-cost, frictionless investing to the average retail investor, and they are the foundation of modern, efficient markets. But as any sensible financial adviser is quick to warn, past returns do not guarantee future profits. Such is the case with the introduction of DL in

²²³ 15 U.S.C. § 78u-1; 15 U.S.C. § 78ff.

²²⁴ Joel Schectman, *SEC Commissioners Push Lifetime Bans on Executives*, WSJ (Feb. 26, 2015), <https://www.wsj.com/articles/BL-252B-6327>.

trading algorithms and the black box problem DL creates. If regulators cannot understand what algorithms are doing—whether because of secrecy or sheer complexity—and lack a tailored regulatory toolbox to deal with DL algorithms, nobody can guarantee the integrity of our capital markets going forward. Rather than placing innovation at the forefront and investor protection and market integrity as afterthoughts, society should choose the preservation of our capital markets. It is not too late to curb DL algorithm use in capital markets, but time is ticking. If society presses on, full innovation ahead, it may not be long until the algorithmic “invisible hand” determines our collective investment future, as Vernor Vinge warned.

The Issue of Utility Tokens: An Analysis of SEC v. Ripple Labs, Inc., Through the Lens of the Howey Investment Contract Test

Ryan Nameth¹

I. Introduction

The rapid expansion and proliferation of crypto assets, and the markets that serve them, have led to a myriad of regulatory and compliance issues for federal regulators within the United States as well as for the issuers of crypto assets. The current regulatory framework employed by federal regulators in the United States is ambiguous and provides insufficient guidance for crypto asset issuers to comply with federal law. As a result, various issuers of crypto assets have faced serious and substantial ramifications from the Securities and Exchange Commission for the ways in which they have performed initial coin offerings (“ICOs”) for the distribution of newly created assets on public markets and exchanges.

The primary focus of this Note will be on the current gaps in the federal regulation of investment contracts under the *Howey* investment contract test as applied to novel digital assets. Specifically, the Financial Stability Oversight Council (FSOC) has identified three key gaps in the current federal regulatory scheme of crypto-assets. FSOC first notes that the spot markets for digital assets that are not securities are subject to limited direct federal regulation and as a result those markets may fail to ensure orderly and transparent trading, prevent conflicts of interest and to prevent market manipulation.² Second, FSOC points out that issuers of digital assets do not have

¹ Juris Doctor Candidate, Rutgers University School of Law-Camden, 2024; B.A., Temple University, 2021.

² DEP’T OF TREASURY, 2022 FIN. STABILITY OVERSIGHT COUNCIL ANN. (2022), <https://home.treasury.gov/system/files/261/FSOC2022AnnualReport.pdf>.

a consistent or comprehensive regulatory framework and thus can engage in regulatory arbitrage.³ If a digital asset issuer has affiliates or subsidiaries operating under different regulatory frameworks, no single regulator would have visibility into the risks of the entire enterprise.⁴ Third, FSOC asserts that a number of crypto asset trading exchanges have proposed offering retail consumers direct access to markets through the vertical integration of the services provided by intermediaries.⁵ FSOC posits that this would threaten financial stability and investor protection.⁶

Further, a question remains as to which federal regulatory agency should be given the authority to regulate specific types of crypto assets. Several federal regulatory agencies have made efforts to lay claim to the regulation of crypto assets including the Securities and Exchange Commission (“SEC”), the Commodity Futures and Trade Commission (“CFTC”), the Internal Revenue Service (“IRS”), and the Financial Crimes Enforcement Network (“FinCEN”). Each of these federal regulatory agencies has attempted to bring the regulation of crypto assets under their authority by proffering varying stances as to how crypto assets should be classified.⁷ The crypto asset industry has been referred to as the “Wild West” as a result of the variance in the guidance set forth by

³ *Id.*

⁴ *Id.*

⁵ *Id.*

⁶ *Id.*

⁷ See DEP’T OF TREASURY FINANCIAL CRIMES ENFORCEMENT NETWORK, FIN -2013-G001, *Application of FinCen’s Regulations to Persons Administering, Exchanging, or Using Virtual Currencies* (2013), <https://www.fincen.gov/resources/statutes-regulations/guidance/application-fincens-regulations-persons-administering> [<https://perma.cc/D9FDRTLA>] (stating that convertible virtual currencies are subject to regulation as monies); See IRS, Notice 2014-21, *Internal Revenue Bulletin*, 2014-16 I.R.B. 938 (March 26, 2014), <https://www.irs.gov/pub/irs-irbs/irb14-16.pdf> [<https://perma.cc/W5DLXBLB>] (stating that virtual currency is treated as property for U.S. federal tax purposes); See U.S. CFTC, *A CFTC Primer on Virtual Currencies*, 11 (Oct. 17, 2017), https://www.cftc.gov/sites/default/files/idc/groups/public/documents/file/labcftc_primercurrency100417.pdf [<https://perma.cc/F65B-Z7LT>] (stating that virtual currencies are commodities); See SEC, *Investor Bulletin: Initial Coin Offerings* (last modified Jul. 31, 2023), <https://perma.cc/6LB9-XMKL> (stating the virtual currencies may be subject to regulation as securities under the Howey test).

these federal regulators, which has created a great deal of uncertainty for crypto asset issuers whom attempt to navigate each agencies regulations' in conducting ICOs.⁸

Of significant importance for this discussion is Section 5 of the 1933 Securities Act.⁹ Section 5 states that

It shall be unlawful for any person, directly or indirectly, to make use of any means or instruments of transportation or communication in interstate commerce or of the mails to offer to sell or offer to buy through the use or medium of any prospectus or otherwise any security, unless a registration statement has been filed as to such security, or while the registration statement is the subject of a refusal order or stop order or (prior to the effective date of the registration statement) any public proceeding or examination under section 8.¹⁰

Essentially, Section 5 of the 1933 Securities Act grants the SEC registration jurisdiction over assets which qualify as investment contracts. Without a properly filed registration statement with the SEC, and notwithstanding several exemptions from registration requirements, issuers are not permitted to solicit offers, sell, or distribute securities.¹¹ Registration may impose greater burdens on issuers in terms of time and costs to ensure and maintain compliance with a myriad of SEC regulations.

⁸ See generally Randolph A. Robinson II, *The New Digital Wild West: Regulating the Explosion of Initial Coin Offerings*, TENN. L. REV. (2018); Jorge Pesok & Samuel Brylski, *SEC's Blockchain Stance Will Likely Impact Exchanges*, LAW360 (Aug. 8, 2017, 2:10 PM), <https://www.law360.com/articles/952055/sec-s-blockchain-stance-will-likely-impact-exchanges> [<https://perma.cc/ZC6Y-F333>].

⁹ See generally 15 U.S.C.S. § 77e (LEXIS through Pub. L. No. 117-327).

¹⁰ *Id.*

¹¹ *See id*

Similarly, the Securities Exchange Act of 1934 has important implications. Under that Act, issuers are required to comply with continuous reporting requirements and are subject to some regulation of internal company controls.¹² Compliance with the continuous disclosure requirements of the 1934 Exchange Act can also be burdensome to issuers who must expand resources, such as time and money, to remain compliant.

To further exacerbate confusion as to who has regulatory authority, not all crypto assets are classified the same. At the outset, crypto assets can be referred to as either “tokens” or “coins” depending on how they interact with underlying platforms. In general, “tokens” are differentiated from “coins” in that tokens are built to function on top of another platform while coins can operate independently of other platforms.¹³ Tokens will be the focus of this Note.

Tokens can be further divided between “utility tokens” and “security tokens” based on their underlying functionality. Utility tokens differ from security tokens by entitling their holder to an underlying functional use, or access to a consumptive good, beyond the profit seeking investment structure which defines security tokens.¹⁴ In contrast to utility tokens, security tokens confer de minimis utility to their holders beyond a promise of the token’s own capital appreciation.¹⁵

¹² See 15 U.S.C.S. § 78a (LEXIS, through Pub. L. No. 117-327).

¹³ Carol Goforth, *The Lawyer's Cryptionary: A Resource for Talking to Clients about Crypto-transactions*, 41 CAMPBELL L. REV. 47, 97 (2019) (citing *Difference Between Cryptocurrency Coins and Tokens*, CRYPTONIAM (Dec. 5, 2017) (italics omitted), [<https://perma.cc/9A4W-V77P>]).

¹⁴ Ryan Strassman, *Anything But Simple: A Critique of the Proposed Simple Agreement for Future Tokens*, 38 REV. BANKING & FIN. L. 833, 839 (2019).

¹⁵ Laura Shin, *Are ICOs For Utility Tokens Selling Securities? Prominent Crypto Players Say Yes*, FORBES (Oct. 2, 2017, 9:15 AM), [<https://www.forbes.com/sites/laurashin/2017/10/02/are-icos-for-utility-tokens-selling-securities-prominent-crypto-players-say-yes/#76c1e7d934fa>] [<https://perma.cc/BW2D-PUU9>].

Security tokens can confer additional rights such as voting rights on the uses of any pooled assets or a form of ownership in the underlying entity; however, these additional rights are secondary to the token's primary purpose of fund raising for the underlying central entity.¹⁶

With these basic concepts in mind, this Note argues that fully functioning utility tokens require further clarified distinction from the umbrella term of "cryptocurrencies" so as to exempt them from the regulatory regime of the SEC, which currently seeks to regulate all crypto assets as securities under the *Howey* investment contract test. Congress should delegate regulatory registration and enforcement priorities to the CFTC for fully functioning utility tokens that meet a determinable threshold of utility or consumptive usage. Other forms of crypto assets that do not meet the requisite threshold of utility should continue to be regulated as securities under the *Howey* investment contract test, if they are to satisfy each of the test's prongs, and thus be subject to the registration and enforcement regulations of the SEC.

II. Background

Current regulatory issues which concern crypto assets require a basic understanding of what crypto assets are, how crypto assets function on the blockchain, and how ICOs are conducted. Further, it is important to highlight the SEC's current regulatory approach to crypto assets under the *Howey* investment contract test.

¹⁶ See, e.g., Josiah Wilmoth, *The Difference Between Utility Tokens and Equity Tokens*, STRATEGIC COIN, <https://strategiccoin.com/difference-utility-tokens-equity-tokens/> [<https://perma.cc/Y8D6-Y2DD>].

A. An Overview of Cryptocurrencies and How They Interact with Blockchains

1. Cryptocurrency: In General

There exists no widely accepted usage of the term “cryptocurrency”, but the term is generally used to refer to the broad class of assets that exist in no tangible form and on distributed ledger technology. Broadly speaking, the term “cryptocurrency” can be used to refer to any digital asset that acts similarly to a traditional form of currency, but operates independently of any third-party intermediary, such as a governmental authority, by utilizing a peer-to-peer authentication method.¹⁷ Peer-to-peer authentication methods make cryptocurrencies unique from traditional forms of tangible currency by utilizing cryptographic means to authenticate transactions, which essentially, allows information to be transmitted in a format that is unreadable until an appropriate mechanism is used by an authorized user to decode the data.¹⁸ Use of the cryptographic means employed to authenticate the transactions of users of a blockchain eliminates reliance on oversight of central authorities, such as governments, banks or any other third party, to authenticate transactions through use of a centralized ledger.¹⁹ The cryptographic ledger technology that makes cryptocurrencies viable and unique is also where cryptocurrencies derive their name from.

Cryptocurrencies reflect a digital interest in the underlying asset that is not represented in any tangible form, unlike a fiat currency which can be reduced to a physical state such as a U.S.

¹⁷ Martin Tiller, *What is a Crypto Currency?*, NASDAQ (Jan. 25, 2018, 10:58 AM), <https://www.nasdaq.com/articles/what-cryptocurrency-2018-01-25>.

¹⁸ What is Cryptography?, TECHOPEDIA (Aug. 25, 2018), <https://www.techopedia.com/definition/1770/cryptography> [<https://perma.cc/P2PY-UWT5>].

¹⁹ See Tillier, *supra* note 17.

dollar bill. Although cryptocurrency is an umbrella term which can be used to refer to a broad class of varying forms of crypto assets, for a cryptocurrency to be considered a currency it would need to be capable of acting as a medium of exchange, a store of value, or a unit of account.²⁰

2. Bitcoin

The most widely known form of cryptocurrency today is Bitcoin. Bitcoin was first introduced in a 2009 whitepaper published by an anonymous author by the name of “Satoshi Nakamoto”.²¹ Since its inception, Bitcoin has served as the “de facto standard” for cryptocurrencies²² and over 1,500 alternative forms of crypto assets, or altcoins, have emerged using a similar framework as that employed by Bitcoin.²³ Bitcoin is currently the dominant virtual currency in terms of its relative value with a market capitalization of around \$366 billion as of the time of this writing.²⁴

Bitcoin primarily serves as an electronic currency and payment platform that enables users to complete valid transactions via the Bitcoin blockchain.²⁵ Bitcoin that is already in existence can be obtained by users in either of two ways; it can be purchased with fiat currencies or other

²⁰ *Regulation of Virtual-Currency Businesses Act*, UNIF. LAW COMM’N, (Aug. 23, 2018), <http://www.uniformlaws.org/Act.aspx?title=Regulation%20of%20Virtual-Currency%20Businesses%20Act> [<https://perma.cc/EQ2T-MHDG>].

²¹ Mark Hodge, *CRYPTO CREATOR Who is Satoshi Nakamoto? Bitcoin creator whose identity is unknown but could be one of the richest people in the world*, THE SUN (Feb. 12, 2018), [<https://perma.cc/KYL6-QTU3>].

²² Sajalali, *The Six Most Important Cryptocurrencies Other than Bitcoins*, STEEMIT BETA, (Aug. 24, 2018), <https://steemit.com/cryptocurrency/@sajalali/the-six-most-important-cryptocurrencies-other-than-bitcoins> [<https://perma.cc/A53S-UT6S>].

²³ Nathan Hochman, *Policing the Wild West of Cryptocurrency*, LOS ANGELES LAWYER, Nov. 2018, at 14.

²⁴ CoinMarketCap, *Bitcoin*, <https://coinmarketcap.com/currencies/bitcoin/> (last visited Oct. 15, 2022, 5:50 PM).

²⁵ Stephanie A. Lemchuk, *Virtual Whats?: Defining Virtual Currencies in the Face of Conflicting Regulatory Guidances*, 15 CARDOZO PUB. L. POL’Y & ETHICS J. 319, 320-24 (2017) (describing the primary uses of the cryptocurrency Bitcoin).

cryptocurrencies through decentralized exchanges such as Coinbase, or Bitcoins can be transacted directly between users of the blockchain.²⁶ Alternatively, new Bitcoins are continually being created and can be obtained by a process called “mining”.²⁷ Users can mine for new Bitcoins by using “sophisticated hardware that solves an extremely complex computational math problem” which in turn secures and validates transactions on the underlying blockchain ledger.²⁸ Since cryptocurrencies utilize decentralized distributed ledgers that do not rely on any single centralized authority to authenticate transactions, mining serves an important purpose as an incentive to motivate users to solve the mathematical equations and thus authenticate transactions that occur on the blockchain.²⁹

3. Ethereum

In contrast to Bitcoin, Ether is another form of crypto asset that has garnered wide acceptance and use as an alternative to traditional fiat currencies. The first white paper illuminating the Ethereum blockchain was published by Vitalik Buterin in November of 2013.³⁰ Ether is currently the second largest crypto asset available, boasting a market capitalization of nearly \$157 billion at the time of this writing.³¹

²⁶ See Hochman, *supra* note 23.

²⁷ Euny Hong, *How Does Bitcoin Mining Work?*, INVESTOPEDIA (May 5, 2022), <https://www.investopedia.com/tech/how-does-bitcoin-mining-work/>.

²⁸ *Id.*

²⁹ *Id.*

³⁰ *History of ETH: The Rise of Ethereum Blockchain*, COINTELEGRAPH, <https://cointelegraph.com/ethereum-for-beginners/history-of-eth-the-rise-of-the-ethereum-blockchain> (last visited Oct. 15, 2022, 6:20 PM).

³¹ *Ethereum*, COINMARKETCAP, <https://coinmarketcap.com/currencies/ethereum/> (last visited Oct. 15, 2022, 5:50 PM).

Ethereum is self-defined to be a “decentralized platform that runs smart contracts: applications that run exactly as programmed without any possibility of downtime, censorship, fraud or third-party interference.”³² Ethereum differs from Bitcoin in that while Bitcoin serves primarily as a payment platform, Ethereum is a blockchain technology that enables other applications and blockchains to be built upon it.³³ Apps built on the Ethereum blockchain enable “developers to create markets, store registries of debts or promises, move funds in accordance with instructions given long in the past (like a will or a futures contract) and many other things.”³⁴

It is important to note however that, technically speaking, Ethereum is the name of only the underlying blockchain while the network itself requires use of its native token known as Ether.³⁵ This differs from Bitcoin which does not differentiate its native coin from its underlying blockchain. Ether is a token that is specific to the Ethereum blockchain and acts as a sort of “crypto-fuel”³⁶ which facilitates the development and functioning of the applications that are built upon the Ethereum blockchain.³⁷ Therefore, Ether, unlike Bitcoin, is not intended to serve as a valid tender. Instead, Ether is intended for use by individuals and entities which utilize the Ethereum blockchain to purchase the necessary computing power required to run applications on the Ethereum network.³⁸ Essentially, “Ether is like a vehicle for moving around on the Ethereum

³² ETHEREUM, <https://www.ethereum.org> [<https://perma.cc/SXP7-DNX6>] (last visited Aug. 24, 2018).

³³ Jin Enyi & Ngoc Dang Yen Le, *Regulating Initial Coin Offerings (“Crypto-Crowdfunding”)*, 8 J. INT’L BANKING & FIN. L. (UK) 495 n.121 (Sept. 1, 2017).

³⁴ Hochman, *supra* note 23.

³⁵ Hodge, *supra*, note 21.

³⁶ Nate Crosser, Comment, *Initial Coin Offerings as Investment Contracts: Are Blockchain Utility Tokens Securities?*, 67 U. KAN. L. REV. 379 at 389 (citing *Ether: The Crypto-Fuel for the Ethereum Network*, ETHEREUM, (<https://www.ethereum.org/ether>)).

³⁷ Prableen Bajpai, *The 6 Most Important Cryptocurrencies Other Than Bitcoin*, INVESTOPEDIA (Jun. 22, 2018, 3:08 PM), [<https://perma.cc/4WKP-C8KY>].

³⁸ Crosser, *supra* note 36 at n. 67.

platform.”³⁹ Ether brings distinct benefits to the Ethereum blockchain as it allows users to “make transactions, earn interest on their holdings through staking, use and store nonfungible tokens (NFTs), trade cryptocurrencies, play games, use social media” and more.⁴⁰ As a result of the of the consumptive use employed by Ether, it is generally accepted to be a form of utility token as opposed to a token of value or security token.⁴¹

Ethereum does however share some core characteristics with the Bitcoin blockchain. Comparably to Bitcoin, Ethereum operates as a blockchain consisting of a decentralized distributed ledger. Thus, it does not rely on a single central server but instead on numerous user computers operating as “nodes” worldwide.⁴² Ethereum, like Bitcoin, also utilizes its users as miners to validate transactions made on the network and rewards these miners with Ether should they be the first to solve the mathematical equation required for authentication.⁴³ The mining of Ethereum entails generating blocks by solving computationally challenging riddles as is the case with Bitcoin.⁴⁴ Further, transactions on both the Bitcoin and Ethereum networks are made public to all users by miners in publishing completed blocks to the underlying decentralized ledger.⁴⁵

Although Bitcoin and Ethereum are the two predominant crypto assets today, a myriad of other crypto assets exist in the space and share many of the same core characteristics.

³⁹ Bajpai, *supra* note 37.

⁴⁰ *What is Ethereum and how does it work?*, COINTELEGRAPH, <https://cointelegraph.com/ethereum-for-beginners/what-is-ethereum-a-beginners-guide-to-eth-cryptocurrency> (last visited Oct. 15, 2022).

⁴¹ *Id.*

⁴² *Id.*

⁴³ *Id.*

⁴⁴ *Id.*

⁴⁵ *Id.*

4. The Blockchain

It is key to first have a general understanding of the importance of current blockchain technology and how it functions in conjunction with crypto assets. Functioning decentralized blockchain technology is what makes crypto assets unique and useful as an alternative to traditional fiat currencies. In its broadest sense, a blockchain can be described as a global network of individually owned and operated computers, referred to as “nodes”, for the purpose of creating a decentralized system that can store data and transactions which is protected by computational encryption.⁴⁶

As previously mentioned, Bitcoin was introduced as the first cryptocurrency in 2009⁴⁷ and with it came the advent and proliferation of the underlying blockchain technology that has allowed it to function.⁴⁸ The previously discussed Ethereum blockchain that was later introduced in 2013⁴⁹ led to further public recognition of the innovations of blockchain technologies.⁵⁰ When attempting to understand what a blockchain is and how it interacts with the crypto assets that it supports, it can be helpful to distinguish each in terms common to traditional currencies; crypto assets

⁴⁶ See, e.g., Rob Marvin, *Blockchain: The Invisible Technology That's Changing the World*, PCMAG (Aug. 29, 2017, 1:38 PM), <https://www.pcmag.com/article/351486/blockchain-the-invisible-technology-thats-changing-the-world> [<https://perma.cc/K7E7-S43C>].

⁴⁷ Hodge, *supra* note 21.

⁴⁸ Julia Finch, *From Silk Road to ATMs: The History of Bitcoin*, THE GUARDIAN (Sept. 14, 2017), <https://www.theguardian.com/technology/2017/sep/13/from-silk-road-to-atms-the-history-of-bitcoin> [<https://perma.cc/DQ5F-ANMZ>].

⁴⁹ COINTELEGRAPH, *supra* note 30.

⁵⁰ Crosser, *supra* note 36, at 385.

operating on the blockchain can be thought of as “units of account” while the underlying blockchain itself can be thought of as the “medium of exchange”.⁵¹

The innovative value of blockchain technologies follows from its unique characteristic of being a truly decentralized peer-to-peer system for the transaction of assets. To put it simply, blockchains do not rely on financial institutions such as PayPal, Facebook, or Amazon Web Services to act as intermediaries for transactions occurring within the network.⁵² Instead, blockchains operate as a peer-to-peer distributed ledger, or accounting book, which connects all computers operating on the network to authenticate transactions, thus removing the need for a centralized authority to act as an authenticator.⁵³ When any single online transaction is recorded on any computer in the network, the transaction becomes part of the distributed ledger and is reflected as an addition to its code.⁵⁴ The transactions occurring on the blockchain are coded into “blocks” which make up the blockchain, and, by virtue of them being recorded on a distributed ledger across a global network of computers, becomes immutable.⁵⁵ Recording transactions that occur on the blockchain into blocks requires a large amount of computing power that is borne by the computers operating on the network.⁵⁶ These computers which operate on the network engage

⁵¹ See, e.g., Daniel Krawisz, *Bitcoin as a Store of Value, Unit of Account, and Medium of Exchange*, SATOSHI NAKAMOTO INST. (Jan. 12, 2015), <http://nakamotoinstitute.org/mempool/bitcoin-as-a-store-of-value-unit-of-account-and-medium-of-exchange/> [<https://perma.cc/S7SJ-WABN>].

⁵² Marvin, *supra* note 46.

⁵³ See Enyi & Le, *supra* note 33, at 3.

⁵⁴ See, e.g., Marvin, *supra* note 46.

⁵⁵ See, e.g., Ramesh Gopinath, *Checking the Ledger: Permissioned vs. Permissionless Blockchains*, IBM THINK BLOG (July 28, 2016), <https://www.ibm.com/blogs/think/2016/07/checking-the-ledger-permissioned-vs-permissionless-blockchains/> [<https://perma.cc/6NH7-BSF9>].

⁵⁶ Commodities Futures Trading Commission, *A CFTC Primer on Virtual Currencies*, LABCTFC, 5-6 (Oct. 17, 2017), http://www.cftc.gov/idc/groups/public/documents/file/labctfc_primercurrencies100417.pdf [<https://perma.cc/RAM7-KALL>].

in a process termed “mining”, as previously mentioned, wherein they utilize a “proof of work”⁵⁷ method to solve challenging computational math equations in exchange for the blockchain’s native crypto asset.⁵⁸ By utilizing distributed ledger technology, a public blockchain generally cannot be controlled or altered by any single individual, thus the relevance of the term “decentralized.”⁵⁹

Another key feature of blockchain technology is that it allows for transactions to occur and be verified without requiring personally identifying information.⁶⁰ When conducting transactions on a blockchain network, users are identified by their own “public key” which operates as an address to identify the parties to the transaction without relaying any personal information about the party beyond that information which is associated with the public key itself.⁶¹ To analogize, the public key can be viewed as a P.O. box address while a second “private key”, which is not shared across a blockchain’s network, acts as the combination to the locked P.O. box.⁶² The public keys allow users to engage in transactions on the blockchain without needing to make their true identity known.

⁵⁷ See Paul Wackerow, Proof-of-Work (POW), <https://ethereum.org/en/developers/docs/consensus-mechanisms/pow/> (last visited Oct. 21, 2022, 3:00 PM) (explaining that proof-of-work is “the mechanism that once allowed the decentralized Ethereum network to come to consensus on things like account balances and the order of transactions, which prevented users from ‘double spending’ their coins and ensured that the Ethereum chain was tremendously difficult to attack or manipulate.”).

⁵⁸ Commodities Futures Trading Commission, *supra* note 56.

⁵⁹ See generally Lucas Mearian, *What Is Blockchain? The Most Disruptive Tech in Decades*, COMPUTER WORLD (May 31, 2018), <https://www.computerworld.com/article/3191077/security/what-is-blockchain-the-most-disruptive-tech-in-decades.html?page=2> [<https://perma.cc/TCH4-5YH2>].

⁶⁰ Djuri Baars, *Towards Self-Sovereign Identity Using Blockchain Technology*, 29 UNIV. OF TWENTE, 46-67, http://essay.utwente.nl/71274/1/Baars_MA_BMS.pdf.

⁶¹ Carola F. Berger, *Bitcoin Part 3--Hashes, Public Key Cryptography "For Dummies" and the Block Chain*, CFB SCI. TRANSLATIONS & CONSULTING (June 29, 2015), <http://www.cftranslations.com/bitcoin-part-3-hashes-public-key-cryptography-for-dummies-and-the-block-chain/> [<https://perma.cc/PY4G-FWLL>].

⁶² Crosser, *supra* note 36, at 388.

The decentralized composition of blockchains brings with it many advantages for users. First, transactions which occur on blockchains do not require interaction with any third-party intermediary.⁶³ As a result of this, blockchains largely eliminate transaction fees stemming from the use of third-party intermediaries and instead only sometimes impose minor fees to sustain its own network.⁶⁴ An additional benefit of blockchain technology arising from the lack of reliance on intermediaries is that transactions on the blockchain take place almost instantaneously regardless of when or where the transaction is initiated.⁶⁵ As previously discussed, users are also able to remain anonymous in engaging in transactions as a result of blockchain's use of public and private keys.⁶⁶ Finally, completed transactions are immutable, or to put it simply, completed transactions are reflected in the history of the blockchain which is available to all users of the blockchain and cannot be altered retrospectively by any one user by virtue of the blockchain's decentralized authentication methods.⁶⁷

One last key component of blockchain technology is its integration of "smart contracts." Smart contracts utilize "if/then" commands within their code which allows computers operating on a blockchain to execute the terms of a pre-determined agreement.⁶⁸ The use of smart contracts is pertinent as it allows for the operation of autonomous virtual organizations, often termed decentralized autonomous organizations ("DAOs"), which do not rely on a centralized authority

⁶³ Hochman, *supra* note 23.

⁶⁴ *Id.*

⁶⁵ *Id.*

⁶⁶ *Id.*

⁶⁷ *Id.*

⁶⁸ Nick Szabo, *Smart Contracts*, NICK SZABO'S ESSAYS, PAPERS, AND CONCISE TUTORIALS (1994), <http://www.fon.hum.uva.nl/rob/Courses/InformationInSpeech/CDROM/Literature/LOTwinterschool2006/szabo.best.vwh.net/smart.contracts.html> [<https://perma.cc/2JJZ-E56D>].

for governance of the organization.⁶⁹ Organizations operating as DAOs through the use of smart contracts therefore rely on an “endogenous consensus of users” rather than an application of any exogenous force by a centralized governing authority.⁷⁰

5. Initial Coin Offerings (“ICOs”)

Initial coin offerings operate as a form of digital crowdfunding available for blockchain-based start-ups.⁷¹ Those seeking to promote an ICO typically publish a whitepaper prior to the offering which details a proposed blockchain technology or a decentralized blockchain application (“DAPP”).⁷² Based on the information published in the whitepaper, promoters seek to solicit capital accumulation in the form of traditional fiat currencies or, in the alternative, other crypto assets for units of the proposed crypto asset which would then be distributed to parties in the form of digital tokens or coins.⁷³

The previously discussed Ethereum blockchain network utilized the ICO format for their initial offering of Ether tokens to the public in 2014 and managed to raise over \$18 million in fiat

⁶⁹ Securities and Exchange Commission, *Report of Investigation Pursuant to Section 21(a) of the Securities Exchange Act of 1934: The DAO*, RELEASE NO. 81207 (July 25, 2017), <https://www.sec.gov/litigation/investreport/34-81207.pdf> [<https://perma.cc/B7U2-MXS8>].

⁷⁰ See, e.g., Nozomi Hayase, *Cryptography as a Democratic Weapon Against Demagoguery*, COINDESK, <https://www.coindesk.com/cryptography-democratic-weapon-demagoguery/> [<https://perma.cc/SKK3-EZS2>] (last updated Aug. 8, 2016 3:33 UTC).

⁷¹ Annika Feign, *What is an ICO?*, COINDESK (Mar. 9, 2022, 3:53 PM), <https://www.coindesk.com/learn/what-is-an-ico/>.

⁷² Alyssa Hertig, *What is a Decentralized Application?*, COINDESK, <https://www.coindesk.com/information/what-is-a-decentralized-application-dapp/> [<https://perma.cc/335M-66BF>] (last visited Oct. 24, 2018).

⁷³ Chance Barnett, *Inside the Meteoric Rise of ICOs*, FORBES (Sept. 23, 2017, 1:21 AM), <https://www.forbes.com/sites/chancebarnett/2017/09/23/inside-the-meteoric-rise-of-icos/#10945aff5670> [<https://perma.cc/8NQC-RMSV>].

currencies and Bitcoin in exchange for the issuance of 50 million Ether tokens to purchasers.⁷⁴ It is important for the purposes of this discussion however to note that although Ethereum's ICO took place in 2014, the Ethereum blockchain itself was not operational until mid-July 2015.⁷⁵ It follows that the purchasers of the Ether tokens had to wait for the functionality of the Ethereum blockchain to go into effect before they could use or transfer their purchased Ether tokens.⁷⁶ Despite this, Ether's ICO is generally regarded as the first large scale successful ICO.⁷⁷

III. Analysis of Current Regulatory Approaches and Classifications of Crypto Assets by Federal Regulatory Agencies

Different federal regulatory agencies have set out varying classifications for crypto assets and the enforcement actions undertaken by the SEC in recent years against several issuers of digital assets has clouded application of the *Howey* test with ambiguities. The SEC has attempted to employ a broad application of the *Howey* test to bring within its registration jurisdiction various non-traditional digital assets based on case-by-case subjective analysis of the *Howey* prongs. The CFTC has also attempted to claim jurisdiction to regulate digital assets as commodities, however the CFTC currently only has limited jurisdiction in spot-markets. The novel characteristics of digital assets have posed new questions under the *Howey* analysis which require regulatory clarity.

⁷⁴ See Feign, *supra* note 71.

⁷⁵ COINTELEGRAPH, *supra* note 30.

⁷⁶ *Id.*

⁷⁷ Feign, *supra* note 70.

A. The *Howey* Test and Classification by the SEC: Crypto Assets are Securities

The SEC acts as a federal regulator to investigate and prosecute securities violations in interstate (online) commerce, particularly to protect “Main Street” and institutional investors.⁷⁸ Under this broad goal of protecting investors, the SEC has acted to inhibit the potential power of ICOs, and the crypto assets that they offer, pursuant to the authority granted to it by the Securities Act of 1933⁷⁹, to shut down several prominent crypto asset ICOs as the sale of unregistered securities.⁸⁰ The SEC seeks to regulate crypto assets as it claims that ICOs “bring increased risk of fraud and manipulation” as a result of there being less regulations tailored to ICOs than exist for traditional capital markets trading in fiat currencies.⁸¹ To classify crypto assets as securities, the SEC acts pursuant to the *Howey* investment contract test to analyze crypto assets on a case-by-case basis.⁸²

The relevant regulatory authority of the SEC here derives primarily from the Securities Act of 1933⁸³ and the Securities and Exchange Act of 1934.⁸⁴ The Securities Act of 1933 was enacted in order to restore investor confidences in capital markets following the historic stock market crash

⁷⁸ See Testimony on “Oversight of the U.S. Securities and Exchange Commission” Before the H. Comm. on Financial Services, 115th Cong. (June 21, 2018) (statement of Jay Clayton, Chairman, SEC) [hereinafter Clayton Testimony], <https://www.sec.gov/news/testimony/testimony-oversight-us-securities-and-exchange-commission> [<https://perma.cc/6RV5-S7PF>].

⁷⁹ Daniel N. Budofsky & Robert B. Robbins, *The SEC's Shutdown of the Munchee ICO*, PILLSBURY (Jan. 2, 2018), <https://www.pillsburylaw.com/en/news-and-insights/the-secs-shutdown-of-the-munchee-ico.html> [<https://perma.cc/EES5-ADEZ>].

⁸⁰ Graham Rapier, *The SEC Has Shut Down Another ICO--This Time an Alleged \$ 600 Million Scam in Texas*, BUS. INSIDER (Jan. 30, 2018, 11:24 AM), <https://markets.businessinsider.com/news/stocks/sec-shuts-down-arise-bank-600-million-alleged-ico-scam-dallas-texas-2018-1-1014571716> [<https://perma.cc/LH3G-NM3N>].

⁸¹ *Cryptocurrency/ICOs*, SECURITIES AND EXCHANGE COMMISSION (July 14, 2021), <https://www.sec.gov/ICO>.

⁸² See *Sec. & Exch. Comm'n v. W. J. Howey Co.*, No. 11421, 1945 U.S. App. LEXIS 4597, (5th Cir. Nov. 13, 1945).

⁸³ 15 U.S.C.S. § 77a (LEXIS through Pub. L. No. 117-214).

⁸⁴ 15 U.S.C.S. § 78a (LEXIS through Pub. L. No. 117-214).

of 1929.⁸⁵ The stated purpose of the Securities Exchange Act of 1934, which supplemented the Securities Act of 1933, is to “eliminate serious abuses in a largely unregulated securities market . . . to prevent fraud and to protect the interest of investors.”⁸⁶ The Acts, together, impose stringent disclosure-focused statutory disclosure and registration requirements on anyone who seeks to offer securities in the United States in an effort to promote a more informed class of investing individuals.⁸⁷ The Acts are in line with the stated purpose of the SEC as a federal regulator which is “to protect investors, maintain fair, orderly, and efficient markets, and facilitate capital formation.”⁸⁸

The SEC acts pursuant to these statutory authorizations of regulatory authority, and in conjunction with the *Howey* investment contract test, to regulate the sale and registration of security assets. The *Howey* investment contract test comes from the prominent case *SEC v. W.J. Howey Co.* which concerned land and service contracts for acreages of citrus groves.⁸⁹ The Howey company would offer for sale half of their groves to the public in an attempt to raise additional financing for the furthered development of the groves.⁹⁰ An individual who sought to take advantage of an agreement with the Howey company would enter into a land sale contract and a service contract for the grove under which the Howey company would service the grove on the individual’s behalf.⁹¹ The service contracts gave the Howey company a leasehold interest and

⁸⁵ 1 K&L GATES, SECURITIES PRACTICE GUIDE §§ 1.01, 2.01 (2018).

⁸⁶ *United Hous. Found., Inc. v. Forman*, 421 U.S. 837, 849 (1975).

⁸⁷ 1 K&L GATES, SECURITIES PRACTICE GUIDE, *supra* note 85 at § 1.01.

⁸⁸ *What We Do*, SEC, <https://www.sec.gov/Article/whatwedo.html> [<https://perma.cc/SJB8-434D>] (last visited Nov. 18, 2022).

⁸⁹ *See Sec. & Exch. Comm’n v. W. J. Howey Co.*, No. 11421, 1945 U.S. App. LEXIS 4597, (5th Cir. Nov. 13, 1945).

⁹⁰ *Id.* at *1247.

⁹¹ *Id.*

complete possession of the acreage agreed to.⁹² As a result of these service contracts, the Howey company was given full discretion and authority over the cultivation of the groves and the harvest and marketing of the crops.⁹³ The Howey company would utilize mail and instrumentalities of interstate commerce to facilitate the land and service contracts with no registration statement or letter of notification being filed with the SEC in accordance with the Securities Act of 1933.⁹⁴ The court held that the sales and service contracts constituted investment contracts for securities and went on to set forth a four-pronged test for use in determining whether an investment contract is at issue on a case-by-case basis.⁹⁵ The ruling has frequently been cited as requiring the satisfaction of the following four prongs in order to deem a transaction as an investment contract of a security:

1. Whether there exists an investment of money;
2. Whether there exists a common enterprise;
3. Whether there exists an expectation of profits; and
4. Whether the expectation of profits is solely from the efforts of others.⁹⁶

An agreement fails the *Howey* investment contract test, and there is no security at issue, if any one of the prongs outlined above is not satisfied. The decision in *Howey* defined an investment contract by its four-prong test and “embodies a flexible rather than a static principle, one that is capable of adaptation to meet the countless and variable schemes devised by those who seek the use of the money of others on the promise of

⁹² *Id.* at *1248.

⁹³ *Id.*

⁹⁴ *Id.*

⁹⁵ *See generally id.*

⁹⁶ *Id.* at *1249.

profits.”⁹⁷ Courts are advised, under the *Howey* test, to focus on the economic realities underlying the transaction and to put substance over form in the case of technological offerings.⁹⁸

The *Howey* test’s first prong, an investment of money, is to be construed broadly and serves to protect investors from financial losses.⁹⁹ As to the third prong of the test, an expectation of profits, the term “profits” has been used to refer to the increase in value of an investment through dividends, periodic payments, appreciation of the instrument, or similar means.¹⁰⁰ The expectation of profits from the transaction need not be the sole motivation for the investment, but must be the primary motivation.¹⁰¹ Therefore, if customers are primarily motivated by a desire to consume the purchased item, securities law may not apply.¹⁰² Further, analysis under the final prong of the *Howey* test, that the expectation of profits is solely from the efforts of others, should focus on whether “the efforts made by those other than the investor are the undeniably significant ones, those essential managerial efforts which affect the failure or success of the enterprise.”¹⁰³

The *Howey* investment contract test is relevant here as it has been applied to a wide range of assets that are not traditionally considered to be securities. The controversial

⁹⁷ *SEC v. Edwards*, 540 U.S. 389, 393 (2004).

⁹⁸ See *SEC v. C. M. Joiner Leasing Corp.*, 340 U.S. 344, (1943).

⁹⁹ Crosser, *supra* note 36, at 399.

¹⁰⁰ *A Securities Law Framework for Blockchain Tokens*, COINBASE at 16 (Dec. 7, 2016) <https://www.coinbase.com/legal/securities-law-framework.pdf> [<https://perma.cc/Y9TZ-DKGR>].

¹⁰¹ See Marco Santori, *Appcoin Law: ICOs the Right Way*, COINDESK (Oct. 15, 2016, 4:04 PM), <https://www.coindesk.com/appcoin-law-part-1-icos-the-right-way/> [<https://perma.cc/CS5B-QHRS>].

¹⁰² *United Hous. Found., Inc. v. Forman*, 421 U.S. 837, 852-53 (1975).

¹⁰³ *Bamert v. Pulte Home Corp.*, 445 F. App’x 256, 262 (2011). (quoting *Williamson v. Tucker*, 645 F.2d 404, 418 (5th Cir. 1981)).

application of the *Howey* investment contract test to less traditional forms of securities contracts frequently turns on the fourth prong of the test, which requires an expectation of profits that is solely based on the efforts of others.¹⁰⁴ A great example of this issue was considered in the case *Gary Plastic Packaging Corp. v. Merrill Lynch, Pierce, Fenner & Smith, Inc.*¹⁰⁵ In that case, Merrill Lynch was selling bank-issued certificates of deposit (CDs) which are not by themselves considered securities.¹⁰⁶ However, Merrill Lynch promised purchasers of the CDs that they would create a secondary trading market for the CDs and offered to buy the CDs back from customers before the end of the maturation term.¹⁰⁷ Merrill Lynch additionally offered to watch out for defaults of the issuing banks and to collect FDIC insurance for those defunct CDs.¹⁰⁸ The court held that, under the *Howey* investment contract test, a customer's decision to invest in the CDs was made in reliance upon the efforts, knowledge and skill of Merrill Lynch, sufficient to satisfy the *Howey* test's fourth prong.¹⁰⁹ The court reasoned that even though CDs are not securities on their own, they became securities in this case as a result of the promises made by Merrill Lynch to take additional steps to make the investment more profitable.¹¹⁰

Further, Protocol Labs argues – as it pertains to crypto assets – in its white paper that the language of this final prong, “from the efforts of others”, is the most controversial of the prongs because it depends on two further findings. Protocol Labs argues that this

¹⁰⁴ *Sec. & Exch. Com. v. W. J. Howey Co.*, 328 U.S. 293, 293 (1946).

¹⁰⁵ *See Gary Plastic Packaging Corp. v. Merrill Lynch, Pierce, Fenner & Smith, Inc.*, 756 F.2d 230, (2d. Cir. 1985).

¹⁰⁶ *Id.* at 230.

¹⁰⁷ *Id.* at 231.

¹⁰⁸ *Id.* at 233.

¹⁰⁹ *Id.* at 241.

¹¹⁰ *Id.* at 242.

final prong requires a finding as to whether the predominate reason the tokens were purchased was a desire for profit, and, whether the token is functional.¹¹¹ The reason for this further distinction, as Protocol Labs contends, is because the sale of functional utility tokens to anyone, regardless of whether they intend to actually use the token or merely profit from their resale on a secondary market, fails the *Howey* test.¹¹² Protocol Labs argues that once a token and project are functional, there are no more efforts to rely upon that will lead to significant profit appreciation.¹¹³ Moreover, Protocol Labs notes that small improvements to the functional project will not greatly impact the value of a utility token because other market factors will equally impact the token's value by the time the token is functional.¹¹⁴ It is commonly believed that supply and demand will be the primary catalysts to price changes after the token reaches functionality. Protocol Labs' argument illustrates a major flaw in the current regulatory approach to the ICOs of crypto assets: issuers who require access to liquid capital markets for the development of fully functioning utility tokens may be unable to do so without being classified as a security under *Howey*, while the same token may not be considered a security if it is fully functioning at the time of the ICO.

Protocol Labs' argument is exemplified well by the Ethereum ICO mentioned earlier, which is hard to square with the SEC's regulation of comparable crypto assets that have been offered since. The Ethereum ICO took place in 2014, however, the Ethereum

¹¹¹ Juan Batiz-Benet, Jesse Clayburgh & Marco Santori, *The SAFT Project: Toward A Compliant Token Sale Framework*, *PROTOCOL LABS*, at 8-9 (Oct. 2, 2017) <https://saftproject.com/static/SAFT-Project-Whitepaper.pdf> [hereinafter Protocol Labs].

¹¹² *Id.* at 9.

¹¹³ *Id.*

¹¹⁴ *Id.* at 10.

blockchain was not functional until nearly a year later. Due to the novelty of crypto assets at that time, Ethereum evaded SEC registration requirements, and as the Ether token is fully functional today, the SEC has not regulated it as a security. Even though the Ethereum blockchain is still undergoing updates via the implementation of new smart contracts into its blockchain, the most recent being a merge to move the blockchain to a prove of stake framework on September 15, 2022¹¹⁵, the SEC does not regard purchasers to be buying Ether tokens with an expectation of profit that is derived solely from the efforts of those continuing to improve its functionality. It can be assumed that the SEC does not regard the ongoing efforts to update the Ethereum blockchain to be the “undeniably significant ones . . . which affect the failure or success of the enterprise.”¹¹⁶

While acknowledging that Ethereum is a decentralized blockchain, Ethereum was created by Vitalik Buterin and he has worked with the Ethereum Foundation to improve the network since its inception.¹¹⁷ Only through the Ethereum Foundation, and the work of researchers and developers, did the Ethereum merge become a reality.¹¹⁸ Mikhail Kalinin, a lead researcher at ConsenSys, has ultimately become known as the “mastermind” behind the merge with other developers stating that the merge would not have happened without his contributions.¹¹⁹ This would seem to implicate *Howey*’s “from the efforts of others”

¹¹⁵ Ethereum, *The Merge*, (last updated Sept. 21, 2023) <https://ethereum.org/en/upgrades/merge/>.

¹¹⁶ *Bamert v. Pulte Home Corp.*, 455 Fed. Appx. 256, 262 (11th Cir. 2011) (citing *Williamson v. Tucker*, 645 F.2d 404, 418 (5th Cir. 1981)) (quoting *SEC v. Glenn W. Turner Enters.*, 474 F.2d 476, 482 (9th Cir. 1973)).

¹¹⁷ Ethereum, *About the Ethereum Foundation*, (last updated Sept. 21, 2023)

[https://ethereum.org/en/foundation/#:~:text=The%20Ethereum%20Foundation%20\(EF\)%20is,even%20a%20traditional%20non%2Dprofit.](https://ethereum.org/en/foundation/#:~:text=The%20Ethereum%20Foundation%20(EF)%20is,even%20a%20traditional%20non%2Dprofit.)

¹¹⁸ See Taylor Locke, *Inside the Ethereum Merge: Behind the scenes of the historic event, according to the people who made it possible*, FORTUNE CRYPTO (Sept. 21, 2022), <https://fortune.com/crypto/2022/09/21/inside-look-behind-the-scenes-ethereum-merge/>.

¹¹⁹ *Id.*

prong. However, the merge is also referred to as an “enormously collaborative” effort as many different teams of researchers and developers worked to bring the idea of the merge to fruition.¹²⁰ One could argue that since multiple independent teams of developers collaborated to realize the merge, there was no single centralized entity to which the holders of Ether could look to for efforts to increase the token’s price.

However, the implementation of a fundamental improvement to the functionality of the underlying blockchain technology of Ether can reasonably be argued to be “essential managerial efforts” of the kind required by *Howey*.¹²¹ The goal of the merge was to reduce energy consumption and improve network transactions, and its implementation fundamentally altered the way in which the Ethereum blockchain works.¹²² The Ethereum Foundation itself even boasts that:

“Imagine Ethereum is a spaceship that launched before it was quite ready for an interstellar voyage. With the Beacon Chain, the community built a new engine and a hardened hull. After significant testing, it became time to hot-swap the new engine for the old one mid-flight. This merged the new, more efficient engine into the existing ship enabling it to put in some serious light years and take on the universe.”¹²³

¹²⁰ *Id.*

¹²¹ See *Bamert v. Pulte Home Corp.*, 455 Fed. Appx. 256, 262 (11th Cir. 2011) (citing *Williamson v. Tucker*, 645 F.2d 404, 418 (5th Cir. 1981)) (quoting *SEC v. Glenn W. Turner Enters.*, 474 F.2d 476, 482 (9th Cir. 1973)).

¹²² Ethereum, *The Merge*, (last updated Sept. 21, 2023) <https://ethereum.org/en/upgrades/merge/>.

¹²³ *Id.*

It would appear that the merge to prove of stake for the Ethereum blockchain was a result of nothing short of “undeniably significant” efforts on the parts of researchers and developers.

Conversely however, traditional market forces, such as supply and demand, do evidently play a significant role in the price changes of the Ether token. The price of Ethereum rose about 20% from a closing price of \$1,236.59 on June 15th, 2022 to closing at \$1,472.77 in the three months leading up to the blockchain update only to subsequently fall around 17% back down to a low of \$1,220.14 just six days later.¹²⁴ The news of the merge conditioned the market and increased prices only to see some holders lock in profits at and around the time that the merge went into effect. Moreover, the merge of Ethereum to a prove of stake framework implies that the overall supply of Ether tokens will decrease over time as miners are no longer being paid Ether for authenticating blocks on its blockchain. As the supply of Ether tokens decreases, holders can expect the value of Ether tokens to increase.

In sum, questions remain as to when and how *Howey*'s “efforts of others prong” is satisfied. The SEC's primary purpose in regulating securities – to protect investors and ensure that they have adequate information – would seem to be served by regulating an asset such as Ether, as the Ether token is still undergoing fundamental and transformative changes to its functionality. However, the SEC continues to operate under the impression that Ether is a digital currency not susceptible to securities regulation. It is difficult to

¹²⁴ WEBULL, <https://app.webull.com/trade> (last visited Feb. 8, 2023).

differentiate the ICO of Ethereum from many other ICOs that have faced the regulatory prowess of the SEC for issuing securities, which leaves issuers of crypto assets questioning their token's status.

The second prong of the *Howey* test, the requirement of a common enterprise¹²⁵, has also been criticized in its application. This prong, and its application to crypto assets, has been specifically criticized in the white paper for Protocol Labs. Protocol Labs argues in its white paper that the common enterprise prong of the *Howey* test is only sometimes satisfied when an ICO sells utility tokens.¹²⁶ In making this argument, Protocol Labs points out that courts have differed in the application of the common enterprise prong, using both a “horizontal commonality test” and a “vertical commonality test.”¹²⁷ Protocol Labs argues that a majority of courts use the “horizontal commonality test” which finds a common enterprise when “multiple investors pool assets and share together in the profits and risks of the enterprise.”¹²⁸ Under horizontal commonality, courts will look for a pooling of investors' interests. In contrast, a minority of courts apply the “vertical commonality test” which can be applied either narrowly or broadly.¹²⁹ In its narrow application, a common enterprise exists “where the fortunes of the investors are bound up with the actual fortunes of the promoter or issuer of the security.”¹³⁰ In the broad application of the vertical commonality test, a “common enterprise exists where the fortunes of the investors are

¹²⁵ *Sec. & Exch. Com. v. W. J. Howey Co.*, 328 U.S. 293, 293 (1946).

¹²⁶ *United Hous. Found., Inc. v. Forman*, 421 U.S. 837, 852-53 (1975).

¹²⁷ *See id.*

¹²⁸ *Id.* at 7.

¹²⁹ *Id.*

¹³⁰ *Id.*

bound up with the mere efforts of the promoter or issuer.”¹³¹ Under either the narrow or broad approach to vertical commonality, the question thus becomes whether the issuers’ interests are tied up with those of the investors. Depending on which test a court uses in analyzing the common enterprise prong, an ICO may satisfy the horizontal commonality test while at the same time failing to satisfy the vertical commonality test. This ambiguity leaves offerors of crypto assets unable to discern if their crypto asset offering will qualify as a security under this prong or not.

Proponents of the crypto asset industry have argued that sellers of already fully functional utility tokens have strong arguments against characterization as a security. The basis of the argument against classifying functional utility tokens as securities is that such tokens rarely satisfy both the “expectation of profits” and “from the efforts of others” prongs of the *Howey* test.¹³² Generally, proponents argue that there are two classes of purchasers of already functional utility tokens. The first class are purchasers who buy tokens to actually use them, as network fees, membership discounts, value staking mechanisms, currencies or for other purposes.¹³³ This first class of purchasers, it is argued, has their profit-seeking motives predominated by their consumptive desires.¹³⁴ The second class of purchasers are those who buy a token expecting to profit merely from the resale of the token on a secondary market and, it is argued that, although those purchasers might

¹³¹ *Id.*

¹³² Kenyon Briggs, *Taming the Wild West: How the SEC Can Legitimize Initial Coin Offerings ("ICOs"), Protect Consumers from Bad Actors, and Encourage Blockchain Development*, 2 BUS., ENTREPRENEURSHIP & TAX L. REV. 424, 438 (2018).

¹³³ Protocol Labs, *supra* note 110 at 9.

¹³⁴ *Id.*

have an expectation of profit per se, their expectation of profits does not predominantly derive “from the efforts of others.”¹³⁵

B. Classification by the CFTC: Crypto Assets are Commodities

The CFTC also seeks to exert regulatory control over crypto assets via the power vested in it by the Commodity Exchange Act. Specifically, the CFTC relies upon Section 1a(9) of the Commodity Exchange Act to bring crypto assets within the scope of the definition of a commodity. Section 1a(9) of the Commodity Exchange Act classifies a “commodity” to include, among other things, “all services, rights and interests in which contracts for future delivery are presently or in the future dealt in.”¹³⁶ This definition of the term commodity has been interpreted broadly by courts.¹³⁷

Some virtual currencies, including Bitcoin, have been argued to fall under this broad definition of the classification of a “commodity.”¹³⁸ In a recent case brought before the Southern District of New York, the court held that “Bitcoin, Ether, Litecoin, and Tether tokens, along with other digital assets, are encompassed within the broad definition of ‘commodity’ under Section 1a(9) of the [Commodity Exchange] Act.”¹³⁹ It has been argued that crypto assets such as the

¹³⁵ *Id.*

¹³⁶ 7 U.S.C.S. § 1a(9) (LEXIS through Pub. L. 118-19).

¹³⁷ *See, e.g., Bd. of Trade of City of Chi., Inc. v. SEC*, No. 08-1116, 2009 U.S. App. LEXIS 29354 (D.C. Cir. Dec. 4, 2009).

¹³⁸ Order Instituting Proceedings Pursuant to Section 6(c) AND (d) of the Commodity Exchange Act, Making Findings, and Imposing Remedial Sanctions, In Re Coinflip, Inc., d/b/a Derivabit, and Riordan, CFTC Docket No. 15-29 (2015).

¹³⁹ Order Instituting Proceedings Pursuant to Section 6(c) AND (d) of the Commodity Exchange Act, Making Findings, and Imposing Remedial Sanctions, In Re ifinex Inc., CFTC Docket No. 22-05 at n.2. (2021).

tokens listed above will generally fail to evade classification as a commodity because they are goods exchanged in a market for uniform quality and value and thus fall both within the common definition of a commodity and the Commodity Exchange Act's definition of a commodity.¹⁴⁰

Although the CTFC seeks to exert regulatory authority over crypto assets, it is limited in its ability to do so. The CTFC's jurisdiction over crypto asset markets extends only so far as to policing fraudulent and manipulative activities in interstate markets.¹⁴¹ Generally, the CTFC is inhibited from exerting regulatory oversight as to crypto asset transactions or exchanges that do not involve margin, leverage, or financing, and cannot require any spot exchanges that deal in crypto to register with the CTFC.¹⁴² Under current law, registration regulation is undertaken by the SEC. This regulatory scheme results in the CTFC's regulatory authority over crypto assets being "enforcement jurisdiction", however, the CTFC cannot be said to have "registration jurisdiction" over crypto assets.¹⁴³

IV. Analysis of Relevant Case Law Pertaining to Crypto Assets and ICOs

The SEC has engaged in several enforcement actions against numerous offerors of crypto assets by utilizing the *Howey* investment contract test to classify various forms of virtual tokens as security tokens. In bringing these actions, the SEC has sought to enforce its registration requirements under the Securities Act of 1933 as applicable to crypto asset ICOs. As a result of

¹⁴⁰ *Id.*

¹⁴¹ Cheryl Isaac, Keri Riemer & Christine Mikhael, *CFRC and SEC Perspectives on Cryptocurrency and Digital Assets – Volume I: A Jurisdictional Overview*, K&L GATES (May 6, 2022), <https://www.klgates.com/CFRC-and-SEC-Perspectives-on-Cryptocurrency-and-Digital-Assets-Volume-I-A-Jurisdictional-Overview-5-6-2022>.

¹⁴² *Id.*

¹⁴³ *Id.*

the enforcement actions brought by the SEC against offerors of crypto assets, courts have provided some guidance as to the applicability of the *Howey* test to digital assets, which has garnered criticisms.

A. SEC v. Ripple Labs, Inc.: Overview of XRP and the XRP Ledger

A contemporary case addressing the classification of digital assets as securities which has garnered heightened attention is that of *SEC v. Ripple Labs, Inc.*¹⁴⁴ This case concerns the creation and facilitation of the XRP ledger and its native token, XRP.¹⁴⁵

The XRP ledger was created in late 2011 and 2012 by a collaborating group of individuals consisting of Arthur Britto, Jed McCaleb, and David Schwartz.¹⁴⁶ The aim of the new blockchain and token was to create a faster, cheaper and more reliable alternative network to compete with the Bitcoin blockchain.¹⁴⁷ The XRP ledger was first launched in 2012, at which time its code automatically generated a fixed supply of 100 billion units of the native XRP token.¹⁴⁸ Despite more than 24 billion units of XRP being facilitated into markets since 2013, the SEC did not file an enforcement action against Ripple Labs [Ripple] for the unregistered offering of securities until seven years later in 2020.¹⁴⁹

¹⁴⁴ See generally *SEC v. Ripple Labs, Inc.*, 2022 U.S. Dist. LEXIS 43497 (S.D.N.Y. Mar. 11, 2022).

¹⁴⁵ See *id.* at *2.

¹⁴⁶ See Brief for Respondent at 6, *SEC v. Ripple Labs, Inc.*, (No. 20-CV-10832) 2022 U.S. Dist. LEXIS 43497.

¹⁴⁷ See *id.*

¹⁴⁸ *Id.* at 9.

¹⁴⁹ Complaint at 17, *SEC v. Ripple Labs Inc.*, (No. 20 Civ. 10832) 2022 U.S. Dist. LEXIS 43497.

Ripple, the centralized entity behind the XRP ledger and XRP token, currently states on its website that the XRP token was “built to be the most practical cryptocurrency for applications across the financial services space.”¹⁵⁰ Ripple’s homepage goes on to claim that “Companies, institutions, developers and individuals around the world use XRP and the blockchain on which it runs, the XRP Ledger (XRPL), because of its extraordinary utility.”¹⁵¹ At the time of XRP’s inception, the XRP ledger and token’s purpose was to serve as a replacement for the current Society for Worldwide Interbank Financial Telecommunications (SWIFT) banking system.¹⁵² The SWIFT system allows individuals to transfer and exchange fiat currencies internationally through traditional centralized banks by assigning each participating financial institution a unique eight to eleven character code.¹⁵³ The banks use the unique identifying code to communicate internationally with other banks to initiate and complete transactions consisting of parties transacting in different fiat currencies.¹⁵⁴ Ripple sought to improve upon the SWIFT system via a decentralized network based on the XRP ledger. Specifically, Ripple argues that XRP and the XRP ledger provides an improved alternative to SWIFT as a result of the speed at which transactions take place on the XRP ledger as well as the exceedingly low cost of these transactions when compared to transfers on the SWIFT system.¹⁵⁵ Ripple states that transactions which take place on the XRP ledger settle in as little as three to five seconds and that the transactions only cost \$0.0002 in fees per transaction, on average.¹⁵⁶

¹⁵⁰ RIPPLE, <https://ripple.com/xrp/> (last visited Dec. 3, 2023).

¹⁵¹ *Id.*

¹⁵² See Nathan Reiff, *Bitcoin vs. Ripple: What’s the Difference?*, INVESTOPEDIA (May 2, 2022), <https://www.investopedia.com/tech/whats-difference-between-bitcoin-and-ripple/>.

¹⁵³ See Julia Kagan, *Society for Worldwide Interbank Financial Telecom. (SWIFT)*, INVESTOPEDIA (Feb. 28, 2022), <https://www.investopedia.com/terms/s/swift.asp>.

¹⁵⁴ *See id.*

¹⁵⁵ *See* Protocol Labs, *supra* note 110.

¹⁵⁶ *Id.*

In addition to the benefits associated with cross border payments on the XRP ledger, Ripple cites two additional use cases for XRP. The first of which is crypto liquidity.¹⁵⁷ Ripple states that the XRP ledger allows users to “Leverage an all-in-one platform to access crypto liquidity to power payments, treasury operations and more.”¹⁵⁸ Essentially, the XRP ledger allows users access to liquidity pools enabling them more ability “to power crypto payments, crypto treasury operations, and a variety of other solutions.”¹⁵⁹ The second use case cited by Ripple is that the XRP ledger allows users to “Implement a scalable, secure, and sustainable Central Bank Digital Currency that meets the high security standards of Central Banks.”¹⁶⁰ This feature of Ripple essentially allows centralized banks the opportunity to create their own tokens on the XRP ledger for use in transactions with individuals and other banks.

B. The Legal Claims for and Against XRP’s Classification as a Security

The SEC first initiated its action against Ripple on December 22nd, 2020, and alleged that Ripple had raised over \$1.3 billion through an unregistered and ongoing digital asset securities offering.¹⁶¹ The complaint filed by the SEC alleged that Ripple, beginning in 2013, raised capital to finance the company’s business through the unregistered sale of securities to U.S. investors, as well as worldwide investors, via digital assets termed XRP, in violation of Section 5 of the Securities Act of 1933.¹⁶² Section 5 provides that

¹⁵⁷ RIPLE, *Crypto Liquidity*, <https://ripple.com/solutions/crypto-liquidity/> (last visited Dec. 3, 2022).

¹⁵⁸ Protocol Labs, *supra* note 110.

¹⁵⁹ *Bd. of Trade of City of Chi., Inc. v. SEC*, No. 08-1116, 2009 U.S. App. LEXIS 29354 (D.C. Cir. Dec. 4, 2009).

¹⁶⁰ Protocol Labs, *supra* note 110.

¹⁶¹ Press Release, *SEC Charges Ripple and Two Executives with Conducting \$1.3 Billion Unregistered Securities Offering*, SEC (Dec. 22, 2022), <https://www.sec.gov/news/press-release/2020-338>.

¹⁶² *Id.*

It shall be unlawful for any person, directly or indirectly, to make use of any means or instruments of transportation or communication in interstate commerce or of the mails to offer to sell or offer to buy through the use or medium of any prospectus or otherwise any security, unless a registration statement has been filed as to such security, or while the registration statement is the subject of a refusal order or stop order or (prior to the effective date of the registration statement) any public proceeding or examination under section 8.¹⁶³

Alternatively, Ripple argues that the SEC ignores the fact that there is no statutory or precedential requirement which would make clear that XRP is to be classified as a security. Ripple alleges that the SEC's failure to issue prompt guidance on XRP's classification as a security served to deny persons of ordinary intelligence any "reasonable opportunity to know what is prohibited."¹⁶⁴ Ripple goes on to set forth its 'essential ingredients' test, which sets forth three elements, that Ripple claims every blue sky case finding an investment contract, as well as *Howey*, considered. The three essential ingredients required of an investment contract as claimed by Ripple are:

1. [A] contract between a promoter and an investor that establishe[s] the investor's rights as to an investment,
2. that contract impose[s] post-sale obligations on the promoter to take specific actions for the investor's benefit, and
3. that contract granted the investor a right to share in profits from the promoter's efforts to generate a return on the use of investor funds.¹⁶⁵

¹⁶³ 15 U.S.C.S. § 77e (LEXIS through Pub. L. No. 118-119).

¹⁶⁴ Brief for Respondent at 5, *SEC v. Ripple Labs, Inc.*, (S.D.N.Y. Oct. 21, 2021) (No. 20 Civ. 10832) (citing *Grayned v. City of Rockford*, 408 U.S. 104, 108 (1972)).

¹⁶⁵ *Id.* at 12-13.

Ripple argues that the *Howey* investment contract test only operates to determine whether contracts satisfying these three elements, which establish rights and obligations, are in fact investment contracts.¹⁶⁶ Ripple contends that since there was no such contract here which established rights or obligations, the XRP token cannot be classified as a security under *Howey*.

1. The Essential Ingredients Test: Contractual Rights and Obligations

The SEC opposes the consideration of Ripple Lab's proffered 'essential ingredients' test. In doing so, the SEC contends that the requirement that a common law contract exist is inconsistent with *Howey*'s flexible and adaptable approach and does not align with the securities laws' broad reach to cover non-traditional investment products.¹⁶⁷ The SEC points out that courts have classified a "kaleidoscopic assortment of pecuniary arrangements that defy categorization in conventional financial terms" to be investment contracts when viewed in the economic reality of the transaction.¹⁶⁸ Specifically, the SEC argues that the court in *Howey* expressly rejected a requirement that a formal document binding the parties be present by holding that it is "immaterial whether the shares in the enterprise are evidenced by formal certificates."¹⁶⁹

Further, the SEC argues that courts applying *Howey* have expressly rejected any requirement that there be contractual post-sale obligations on the part of the issuer or that contractual rights to receive profits need be granted to purchasers.¹⁷⁰ In doing so, the SEC cites to

¹⁶⁶ *Id.* at 13 (citing *Glen-Arden Commodities, Inc. v. Constantino*, 493 F.2d at 1034 (1974)).

¹⁶⁷ Complaint at 1, *SEC v. Ripple Labs, Inc.*, (S.D.N.Y. 2022) (No. 20 Civ. 10832).

¹⁶⁸ *Id.* at 20 (citing *SEC v. SG Ltd.*, 265 F.3d 42, 47 (1st Cir. 2001)).

¹⁶⁹ *Id.* at 39-40 (citing *Sec. & Exch. Com. v. W. J. Howey Co.*, 328 U.S. at 301 (5th Cir. 1945)).

¹⁷⁰ *Id.* at 1.

Balestra v. ATBCOIN, LLC in which an investment contract was found between purchasers and issuers of digital tokens despite the absence of any formal written contract.¹⁷¹ That court held that the purchasers expectation of profits came from the promoter's marketing campaign and website and therefore no contractual right to share in the profits of the promoter's efforts was required.¹⁷² Similarly, the SEC cites to *Beranger v. Harris* where that court held offers and sales of digital tokens were securities transactions notwithstanding the absence of a contractual agreement between the parties.¹⁷³ That court held that the expectation of profits premised on promotional statements in a 'whitepaper' and on social media were sufficient without requiring explicit rights to profit sharing.¹⁷⁴

Ripple, conversely, argues that the SEC's own past guidance has provided that assets sold without accompanying future promises, even when marketed as 'investments', are not securities.¹⁷⁵ To illustrate its position, that absent contractual obligations and rights XRP fails to become a security, Ripple proffers an example wherein a company owns 55% of the world's supply of a rare earth metal.¹⁷⁶ Ripple hypothetically sets out that the earth metal only has a modest current use, but asks us to suppose that the company believes the earth metal will one day be revolutionary.¹⁷⁷ Ripple argues that if this company were to sell blocks of the raw earth metal to garner capital to develop its revolutionary use case, these sales, and presumably any secondary

¹⁷¹ *Id.* at 21 (citing *Balestra v. ATBCOIN LLC*, 380 F. Supp. 3d 340, 352-57 (S.D.N.Y. 2019)).

¹⁷² *Id.*

¹⁷³ *Id.* at 24 (citing *Beranger v. Harris*, 2019 WL 5485128 at *1, *3-4 (N.D. Ga. Apr. 24, 2019)).

¹⁷⁴ *Id.*

¹⁷⁵ Brief for Respondent at 15, *SEC v. Ripple Labs, Inc.*, (S.D.N.Y. Oct. 21, 2021) (No. 20 Civ. 10832) (citing *American Diamond Co.*, 1977 WL 10907, at *4-5 (SEC Aug. 15, 1977)).

¹⁷⁶ *Id.* at 14.

¹⁷⁷ *Id.*

sales of the raw earth metals, would be considered transactions of securities.¹⁷⁸ The sales would be considered securities transactions as the purchasers' interests would be aligned with those of the company, the proceeds of the raw earth metal sales essentially funded the development of the business, and the company is committed to develop use cases for the metal.¹⁷⁹ However Ripple argues that this logic is irreconcilable with the economic realities of the transaction as a simple purchase of a product such as an earth metal, that confers no further rights and imposes no obligations, cannot be a security.¹⁸⁰ The purchasers' rights in the earth metals would be nothing more than a fee simple interest, and even if the company did succeed in developing use cases for the metal, the purchasers of the earth metals do not have any right to share in the profits of the development.¹⁸¹ The purchasers' interests may be aligned with those of the company to develop use cases for the metal so that it becomes more valuable, however, the purchaser's only windfall would be to hope to be able to re-sell the metal for profit on a secondary market. If the company were to fail to develop use cases for the metal, purchasers would have no recourse and the company would face no repercussions.

This illustration makes apparent the current issues with the SEC's reliance on *Howey* as the exclusive investment contract test to classify digital assets as securities. The difference between an asset that is classified as a security and one that is classified otherwise could simply be due to the speculative nature of each. Utility tokens are novel and thus are often speculative assets, but their speculative nature does not deplete the asset's intrinsic value. Absent the

¹⁷⁸ *Id.*

¹⁷⁹ *Id.*

¹⁸⁰ *Id.* at 15.

¹⁸¹ *Id.*

assignment of rights or obligations, it is hard to differentiate the sale of a consumptive token from any other consumptive commodity that may increase or decrease in value due to traditional market forces. Speculation as to asset appreciation entails an arbitrary and subjective analysis, and, as Ripple contends, Congress has not authorized the SEC to regulate the sales of assets as securities based on their speculative nature.¹⁸² Notwithstanding the absence of an assignment of contractual rights or obligations, Ripple continues that the XRP token does not qualify as a security under the *Howey* investment contract test.

2. *Howey* Prong 1: The Investment of Money

At the outset, Ripple concedes that some sales of XRP tokens did involve the receipt of money from purchasers.¹⁸³ However, Ripple seeks to establish that not all transactions of XRP tokens over an eight-year period involved the investment of money. This argument is relevant because the SEC has the burden of proving that each transaction for which it seeks to establish liability has satisfied all *Howey* factors.¹⁸⁴

First, Ripple argues that in many instances the transactions made in XRP tokens did not involve a sale. In support of this claim, Ripple states that XRP tokens were given away in significant amount for free to early promoters and adopters of the technology.¹⁸⁵ Additionally, Ripple asserts that they have donated more than four billion units of XRP to charities.¹⁸⁶ Second,

¹⁸² *Id.*

¹⁸³ *Id.* at 17, n.7.

¹⁸⁴ *Id.*

¹⁸⁵ *Id.* at 17-18.

¹⁸⁶ *Id.* at 18.

Ripple contends that *Howey* requires “that the investor commit his assets to the enterprise.”¹⁸⁷ Ripple suggests that purchasers of XRP cannot be said to have committed assets to the Ripple enterprise because most secondary market purchasers did not purchase XRP tokens from Ripple.¹⁸⁸

The SEC counters these arguments by contending that the distributions of XRP to early promoters and adopters, as well as subsequent secondary sales, constitute indirect sales and offers of securities without the filing of a registration statement which is prohibited by Section 5 of the Securities Act of 1933.¹⁸⁹ Although Ripple may not have sold XRP to the early adopters and developers, the distribution would constitute an offer in violation of Section 5. The SEC notes that Ripple even concedes that the parties which received XRP directly from Ripple could “transfer their XRP (in exchange for units of another currency, goods, or services) to another holder.”¹⁹⁰ Further, the SEC contends that Ripple took steps to manage these secondary sales to the public and thus indirectly facilitated sales of securities in violation of Section 5. In sum, the SEC asserts that these distributions were a part of Ripple’s plan to distribute XRP from its balance sheet to market participants to create a liquid market for the token and thus advance Ripple’s interests.¹⁹¹

Third, Ripple asserts that *Howey* requires an investment of money, not merely a payment of money.¹⁹² In making this argument Ripple stresses that the XRP token was functional at the time of its distribution.¹⁹³ Ripple states that the XRP token plays a critical role in operating

¹⁸⁷ *Id.*

¹⁸⁸ *Id.*

¹⁸⁹ Complaint at 26, SEC v. Ripple Labs, Inc., 540 F. Supp. 3d 409 (S.D.N.Y. 2022) (No. 20 Civ. 10832).

¹⁹⁰ *Id.*

¹⁹¹ *Id.* at 9.

¹⁹² Brief for Respondent at 18, SEC v. Ripple Labs, Inc., (S.D.N.Y. 2022). (No. 20 Civ. 10832).

¹⁹³ *Id.* at 6.

the underlying Ripple ledger which requires the destruction of a small amount of XRP for processing – a function without which the Ripple ledger would not function.¹⁹⁴ Additionally, Ripple claims that the XRP tokens were fully functional for their intended purpose of providing a cheaper, faster, and reliable alternative to the SWIFT banking system as previously discussed.¹⁹⁵ Ripple points to previous SEC guidance which provided that digital assets would be less likely to be considered securities if three elements are satisfied: “[t]he distributed ledger network and digital asset are fully developed and operational;” if “[h]olders of the digital asset are immediately able to use it for its intended functionality on the network;” and if “it can immediately be used to make payments in a wide variety of contexts, or acts as a substitute for real (or fiat) currency.”¹⁹⁶ The core idea of Ripple’s argument here is that the XRP token was purchased for use as a consumptive good as it was functional when purchased and thus was not an investment of money per se.

To illustrate its assertion that some transactions involving XRP were simply payments and not investments, Ripple contrasts the facts of this case to those of *SEC v. Telegram Group, Inc*, the case upon which the SEC relies in arguing that a payment of money is sufficient under *Howey*.¹⁹⁷ *Telegram*, along with *SEC v. Kik Interactive*, were the first two major enforcement actions brought by the SEC which required interpretations as to *Howey*’s application to the form of novel ‘investment contracts’ posed by digital assets.¹⁹⁸ Ripple argues that *Telegram* never reached a decision specific to this issue as it was not disputed that there was an investment of

¹⁹⁴ *Id.* at 7.

¹⁹⁵ *Id.* at 7-8.

¹⁹⁶ *Id.* at 50.

¹⁹⁷ See Brief for Respondent at 25, *SEC v. Ripple Labs Inc.*, (S.D.N.Y. 2022) (No. 20 Civ. 10832).

¹⁹⁸ See *SEC v. Telegram Grp. Inc.*, 448 F. Supp. 3d 352 (S.D.N.Y. 2020); *SEC v. Kik Interactive Inc.*, 492 F. Supp. 3d 169 (S.D.N.Y. 2020).

money in that case.¹⁹⁹ In doing so, Ripple attempts to differentiate the present facts from those of *Telegram*, in which purchasers invested money into a common enterprise which promised to then develop a blockchain that would allow for “future delivery” of the tokens at issue.²⁰⁰ In the case of XRP, Ripple contends that purchasers were given an immediate right to receipt of XRP tokens, which is an important qualification as purchasers in *Telegram*, it is argued, risked a loss on their investment because the receipt of tokens was contingent on Telegram’s ability to develop the blockchain.²⁰¹

In turn, Ripple asserts that “In the absence of a ‘common enterprise’ between the parties, [a purchaser’s] expectation of a profit on resale is insufficient to transform what is essentially a sale of . . . property into the sale of an investment contract.”²⁰² Although commonality is a separate prong of *Howey*, it plays a role here, as Ripple illustrates, because without an enterprise there is nothing in which purchasers’ could be said to be ‘investing’ in rather than simply purchasing a consumptive good that may increase or decrease in value depending on traditional market forces. The SEC first attempted to label Ripple itself as the common enterprise in which XRP holders acquired an interest; however, this is unworkable as it is not disputed that XRP holders do not have any interest in Ripple.²⁰³ Then, the SEC attempted to classify the enterprise behind XRP as the “XRP ‘ecosystem’”, defining the ecosystem to comprise of “all the software, people, and organizations who are involved with a blockchain project . . .”²⁰⁴ Ripple contends that

¹⁹⁹ Brief for Respondent at 19, n.8, *SEC v. Ripple Labs, Inc.*, (S.D.N.Y. Oct. 21, 2022) (No. 20 Civ. 10832).

²⁰⁰ *Id.*

²⁰¹ *Id.*

²⁰² *Id.* at 20.

²⁰³ *Id.*

²⁰⁴ *Id.*

this is an unreasonable definition of an enterprise and that regardless, the ‘ecosystem’ is not something that XRP holders acquire an interest in.²⁰⁵ The SEC’s attempt to categorize the enterprise behind the XRP token as a broad ecosystem consisting of independent developers and researchers not only seems unreasonable, but directly contradicts their current position that Ether is not a security, which, as previously discussed, is continuously undergoing updates to its blockchain via a network, or ‘ecosystem’ of independent researches and developers.

Of the arguments made by Ripple in response to the SEC’s claim that there was an investment of money, Ripple’s third contention, differentiating between payments and investments, is its most compelling.

3. *Howey* Prong 2: A Common Enterprise

The second prong of *Howey* requires both horizontal and vertical commonality to exist for an asset to be classified as a security. Horizontal commonality requires that the fortunes of each investor within a pool of investors be tied to the success of the overall enterprise.²⁰⁶ Vertical commonality requires that the *fortunes of investors be tied to the fortunes of the promoter of the asset*.²⁰⁷

The SEC contends that horizontal commonality is present here for two reasons. First, the SEC alleges that Ripple treated investor cash indistinguishably from its own cash and spent it

²⁰⁵ *Id.*

²⁰⁶ See Brief for Respondent at 27, SEC v. Ripple Labs Inc., (S.D.N.Y. 2022) (No. 20 Civ. 10832) (citing Revak v. SEC Realty Corp., 18 F.3d at 87 (2d Cir. 1994)).

²⁰⁷ *Id.*

to find use cases and value for the XRP token.²⁰⁸ Second, the SEC argues that XRP tokens are fungible, with the price of each token rising and falling equally in markets; thus, an increase in the price of XRP would benefit all holders.²⁰⁹ Similarly, the SEC asserts that vertical commonality is found here by virtue of the fortunes of XRP investors rising and falling with those of Ripple, as a result of Ripple's initial retention of nearly all XRP tokens and subsequent holdings of billions of XRP units.²¹⁰

The SEC cites to both *Telegram* and *SEC v. Kik Interactive* as the basis for its reasoning that there exists both horizontal and vertical commonality in the case of XRP. However, one can easily differentiate the facts of those cases from the present case. The court in *Telegram* held that horizontal commonality existed where purchasers bought a right to future receipt of a token, and where, if the venture failed, investors would “suffer a diminution in the value of their grams.”²¹¹ Further, the SEC cites to *Telegram* for its proposition that vertical commonality existed in that case by virtue of Telegram giving itself a 28% stake in their token, which in turn linked the company's financial fortunes to the price of their token.²¹² Similarly, in *Kik Interactive*, that court held that horizontal commonality was present because Kik used proceeds from the sale of “kin” tokens for the “construction of the digital ecosystem it promoted” and investors “reaped their profits in the form of increased value of kin.”²¹³

²⁰⁸ *Id.*

²⁰⁹ *Id.*

²¹⁰ *Id.* at 28.

²¹¹ *Id.* (citing *SEC v. Telegram Grp., Inc.*, 448 F. Supp. 3d 352, 369-70 (S.D.N.Y. 2020)).

²¹² *Id.*

²¹³ *Id.* (citing *SEC v. Kik Interactive, Inc.*, 492 F. Supp. 3d 169, 178 (S.D.N.Y. 2020)).

As to the SEC's argument on horizontal commonality, although both the holders of XRP and Ripple itself stand to gain and lose together in correlation with changes to the value of XRP in markets, the fortunes of both XRP holders and Ripple do not necessarily depend on the overall success of the Ripple enterprise. As Ripple points out, the undisputed evidence shows that Ripple can succeed or fail regardless of whether XRP purchasers' holdings are profitable or unprofitable, notwithstanding the fact that Ripple holds more XRP than anyone else.²¹⁴ Further, in both *Telegram* and *Kik Interactive* the facts indicated that purchasers' funds were required to develop a fully functioning digital asset. In contrast, Ripple distributed XRP only after the blockchain and token were functional and did not require purchasers' funds to develop the initial use case of the XRP token. Since the XRP token was already functional at the time of its distribution, Ripple could have disappeared, and the value of the tokens would be dictated by traditional market factors tied to the tokens' intrinsic value. In this sense, Ripple could have failed without resulting in a "diminution in the value" of XRP, which contradicts the facts of *Telegram* where without the development of a blockchain on the part of Telegram, no tokens would have even come into existence.²¹⁵ Ripple, in a sense, has already achieved the 'success' of the enterprise in issuing the fully functioning utility token and, in doing so, did not rely on proceeds from purchasers. Thus, the fortunes of the XRP purchasers cannot be said to be tied to this success and further, a future collapse of Ripple would not necessarily mean that the XRP token would itself be a failure.

²¹⁴ Defendants' Opposition to Plaintiff's Motion for Summary Judgment at 9, SEC v. Ripple Labs, Inc., No. 20-CV-10832 (S.D.N.Y. Oct. 21, 2022), ECF No. 675.

²¹⁵ *Id.* at 19 n.8.

Although the SEC's comparison of Ripple's retention of XRP tokens to the retention undertaken by Telegram is analogous, *Howey* requires both horizontal and vertical commonality to be present. The weak evidence of horizontal commonality, as discussed above, should be dispositive on this issue.

4. *Howey* Prong 3: An Expectation of Profits from the Efforts of Others

Under the final prong of the *Howey* test is the requirement that purchasers have a reasonable expectation of profits based on the efforts of others.²¹⁶ As mentioned previously, Ripple reads this prong to require a contractual transfer of rights or obligations while the SEC argues for its broad interpretation.²¹⁷

The SEC posits that the question posed under *Howey* is “whether, under all the circumstances, the scheme was being promoted primarily as an investment or as a means whereby participants could pool their own activities, their money and the promoter’s contribution in a meaningful way.”²¹⁸ The focus here is not on the nature of the profits themselves, argues the SEC, but instead on the reasonable expectations that have been created by the promoter of the asset.²¹⁹ To further their argument, the SEC asserts that no cases have supported Ripple’s contention that,

²¹⁶ SEC v. W. J. Howey Co., 328 U.S. 293, 298-99 (1947).

²¹⁷ Pl. SEC’s Mem. of Law in Opp’n to Defs’ Motion for Summary Judgment. at 1, SEC v. Ripple Labs, Inc., No. 20-CV-10832 (S.D.N.Y. Oct. 21, 2022), ECF No. 674.; Defendant’s Opposition to Plaintiff’s Motion for Summary Judgment at 15, ECF No. 675 (citing American Diamond Co., 1977 WL 10907, at *4-5 (SEC Aug. 15, 1977)).

²¹⁸ Pl. SEC’s Mem. of Law in Opp’n to Defs’ Motion for Summary Judgment at 24, SEC v. Ripple Labs, Inc., No. 20-CV-10832 (S.D.N.Y. Oct. 21, 2022), ECF No. 674 (quoting SEC v. Aqua-Sonic Products Corp., 687 F.2d 577, 582 (2d Cir. 1982)).

²¹⁹ *Id.* at 50.

if market forces dictate the price of an asset, then it cannot be considered an investment contract.²²⁰ Specifically, the SEC cites to *Grenader* in which that court held there to be no investment contract where purchasers “. . . desired to personally occupy the apartments . . .” and the promoters made no representations leading the purchaser to expect “bonanza” or that the promoter would use the proceeds from the sales to further develop the enterprise.²²¹ The SEC notes that the holding in *Grenader* did not turn on a determination as to market forces’ effects on the price of the apartments but rather on whether an investor could have reasonably looked to the seller to make efforts to increase the value of the assets.²²² Moreover, the SEC cites to a litany of cases which hold that an investment contract can exist in the absence of contractual undertakings with purchasers’ reasonable expectations of profits deriving from promotional materials facilitated by the issuers.²²³ The courts cited by the SEC here have asserted that there need not be contractual rights or obligations and investor’s expectations of profits could be formed based on marketing campaigns, press releases, advertisements, and the promoters’ websites. One court even went so far as to include promotional statements facilitated through social media posts.²²⁴

The SEC argues that under these cases interpreting *Howey*, Ripple engaged in promotional activities that created a reasonable expectation of profits for purchasers’ of XRP tokens.²²⁵ In making this argument, the SEC points to examples of XRP’s promotion as an investment opportunity including marketing brochures and tweets representing that Ripple would

²²⁰ *See id.* at 51.

²²¹ *Id.* at 52 (citing *Grenader v. Spitz*, 537 F.2d 612 (2d Cir. 1976)).

²²² *Id.*

²²³ *Id.* at 20-24 (citing *SEC v. SG Ltd.*, 265 F.3d 42 (1st Cir. 2001)); *SEC v. Scoville*, 913 F.3d 1204 (10th Cir. 2019); *Balestra v. ATBCOIN LLC*, 380 F. Supp. 3d 340 (S.D.N.Y. 2019); *Audet v. Fraser*, 2022 WL 1912866 (D. Conn. June 3, 2022); *Beranger v. Harris*, 2019 WL 5485128 (N.D. Ga. Apr. 24, 2019).

²²⁴ *Id.* at 24 (citing *Beranger v. Harris*, 2019 WL 5485128 at *1, *3-4 (N.D. Ga. Apr. 24, 2019)).

²²⁵ *Id.* at 11.

retain 50% of XRP tokens “to build a team to contribute code, build apps, [and] promote #Ripple,” touting increases in XRP’s price as “Ripplemania,” and casting Ripple as the “central authority” as to the XRP token, who was “legally obligated” to try to maximize the value of XRP, and who was committed to “developing client and server software for as long as necessary” because it “believed that broad adoption of Ripple as a payment platform would drive demand.”²²⁶ The SEC further contends that Ripple undertook efforts to establish trading markets for XRP including seeding the market through giveaways, paying market makers to buy and sell XRP, distributing XRP, combatting market uncertainty, ensuring orderly liquidations of XRP, and taking steps to encourage exchanges to make XRP available to users.²²⁷

Conversely, Ripple asserts that the SEC must prove that purchasers had a “reasonable expectation of profits to be derived from [Defendants’] entrepreneurial or managerial efforts,” not just whether purchasers reasonably expected profits.²²⁸ The crux of Ripple’s argument here is that purchasers’ reasonable expectation of profits must be contingent upon the continuing efforts of the promoter and there was simply no such commitment here on Ripple’s behalf.²²⁹ Ripple contends that the SEC ignores that many of the sales, donations, giveaways, and purchases of XRP created no contractual relationship between the Defendants and purchasers.²³⁰ In those cases where a contract did exist, Ripple argues that those contracts imposed no post-transaction obligation on

²²⁶ *Id.* at 55.

²²⁷ *Id.* at 6.

²²⁸ Defendants’ Opposition to Plaintiff’s Motion for Summary Judgment at 33, SEC v. Ripple Labs, Inc., No. 20-CV-10832 (S.D.N.Y. Oct. 21, 2022), ECF No. 675 (citing *United Hous. Found., Inc. v. Forman*, 421 U.S. 837, 852 (1975)).

²²⁹ *Id.* at 33-34.

²³⁰ *Id.* at 9.

Ripple to take actions for the benefit of XRP purchasers and gave holders of XRP no rights to profits or proceeds.²³¹

Even absent a contractual relationship, Ripple argues that the SEC has failed to identify any specific representations that any specific member of the public viewed reasonably as proof that Ripple would undertake efforts from which the purchaser would profit, and that thus served as the basis for any specific purchase decision.²³² As to the statement cited by the SEC that Ripple was “legally obligated to maximize shareholder value,” the SEC ignores the clear statement in that same document that “[w]e absolutely make no promises or representations about the value of XRP to the world in general.”²³³ Beyond this statement, Ripple asserts that “touting” and “promoting” XRP’s potential is materially different from undertaking an obligation to use its efforts to increase XRP’s price.²³⁴ Specifically, Ripple takes the position that “promises of [a] general nature” that are not accompanied by “actual commitments to perform specific services” are mere marketing puffery which does not establish a reasonable expectation of profits by investors.²³⁵ Importantly, Ripple contends that the statements to which the SEC points pertaining to creating use cases and demand for XRP do not establish a commitment on Ripple’s part to actually do so.²³⁶ As a result, Ripple asserts, those statements only indicate that Ripple had its own interest in the value of XRP and that it had an incentive to pursue increasing XRP’s value for its own benefit.²³⁷

²³¹ *Id.*

²³² *Id.* at 11.

²³³ *Id.* at 40.

²³⁴ *Id.* at 36.

²³⁵ *Id.* (quoting *Happy Inv. Grp. v. Lakeworld Props., Inc.*, 396 F. Supp. 175, 181 (N.D. Cal. 1975)).

²³⁶ *Id.* at 38.

²³⁷ *Id.*

5. Outlook

In sum, the current ongoing litigation between Ripple and the SEC is an appropriate illustration of the current ambiguities in digital asset regulation. Both the SEC and Ripple have filed competing complaints for summary judgement based on their varying interpretations of what constitutes a security under *Howey*'s investment contract test and subsequent common law. The SEC puts forth an argument for the broad application of the *Howey* test, while Ripple seeks to have the court recognize its 'essential ingredients' test, which most significantly would require a contractual relationship between the parties. The case law cited by both Ripple and the SEC appear to at times contradict each other as the prongs of the *Howey* test are somewhat subjective and require interpretation on a contextual case-by-case basis. The ambiguities that exist under the *Howey* test are only further muddied when applied to novel forms of digital assets that do not conform to any traditional asset classifications. The case against Ripple also exemplifies the dangers of ignoring the current ambiguities, as XRP was facilitated in public markets under the impression that XRP tokens were not a security for seven years prior to the SEC's enforcement action. This form of regulation by enforcement leaves issuer's unsure of their legal obligations and leaves purchasers unsure of the level of risk they are undertaking.

V. Proposed Legal Test for Distinguishing Utility Tokens from Security Tokens and Providing Regulatory Clarity

True utility tokens that are functioning at the time of their ICO require a refined distinction from security tokens as to avoid being regulated under the *Howey* test as securities. In seeking

further clarity as it pertains to the regulation of crypto-assets, an exemption to the *Howey* investment contract test should be carved out to allow ICOs of functioning utility tokens to operate independently of the SEC's registration requirements. Fully functioning utility tokens feature distinct and innovative characteristics that do not coincide with the common characteristics of traditional securities and therefore should not be regulated as such. Courts have traditionally applied a three-factor test when considering whether an asset was purchased for consumptive use.²³⁸ That three-factor test asks: (1) whether the amount sold was indicative of a true consumptive purpose; (2) whether the promoter, despite disclaiming that the instruments could only be "used," also made representations that "fueled expectations of profit," and (3) whether it is reasonable to expect purchasers to "use" the item.²³⁹ Here, I propose a variation of this test which could be made specifically applicable to digital assets having consumptive attributes in order to alleviate regulatory uncertainty in the regulation of digital assets. A crypto asset that satisfies the following four prongs, at the time of its initial offering, should be regarded as a fully functioning utility token and thus should be immune from the SEC's Section 5 registration requirements for securities:

1. The token provides a reasonable utilitarian or consumptive function that provides value to its holder notwithstanding any direct financial gain;
2. The promotion and marketing of the underlying token to purchasers prior to its initial distribution was predominately predicated on the token's consumptive use as a utility token;
3. At the time of the distribution of the underlying token, reasonable efforts were made by the issuer(s) to ensure that initial token sales were made predominantly

²³⁸ Pl. SEC's Mem. of Law in Opp'n to Defs' Motion for Summary Judgment at 42, *SEC v. Ripple Labs, Inc.*, No. 20-CV-10832 (S.D.N.Y. Oct. 21, 2022), ECF No. 674 (citing *United Housing Found v. Forman*, 421 U.S. 837 (1975)).

²³⁹ *Id.*

- to purchasers who could avail themselves of the intended consumptive use of the token; and
4. The initial issuer(s) forfeit(s) any significant economic power over the supply or demand for the token at the time of the Initial Coin Offering.

Further, Congress should enact legislation that would impose a three-year safe harbor for newly issued digital assets to accommodate issuers that require access to liquid capital markets to realize the full development of a utility token. Although this safe harbor would not alleviate these issuers from Section 5's registration requirement, it would have the effect of alleviating these issuers from the continuous reporting requirements of the 1934 Securities Exchange Act.²⁴⁰ The three-year statutory safe harbor advocated for here would begin to run with the first token sale of the offering.²⁴¹ At the outset, a token subject to the three-year safe harbor would be presumed to be a security token.²⁴² During the period of the three-year statutory safe harbor, the SEC should be granted the power to make ongoing evaluations as to the utilitarian characteristics and decentralization of the network.²⁴³ If the token meets a sufficient level of utility and decentralization within the three-year period, the token's status as a security token would be negated and the token would then be classified as a utility token.²⁴⁴ Determinations as to the sufficient level of utility required of a token to rebut the presumption that it is a security should be addressed by objectively analyzing whether a reasonable person could derive value from the token that is not directly tied to the realization of financial gain on the token's price in secondary markets.

²⁴⁰ See 15 U.S.C.S. § 78a (LEXIS, through Pub. L. No. 117-327).

²⁴¹ Hester M. Peirce, *Token Safe Harbor Proposal 2.0*, SEC (Apr. 13, 2021), <https://www.sec.gov/news/public-statement/peirce-statement-token-safe-harbor-proposal-2.0>.

²⁴² *Id.*

²⁴³ *Id.*

²⁴⁴ *Id.*

Determinations as to the sufficient level of decentralization can be addressed through use of the *Howey* investment contract test as it requires an expectation of profits derived from the efforts of others.²⁴⁵ As previously discussed, the blockchains on which functional utility tokens are to run are decentralized through distributed ledger technology. The decentralization of the underlying blockchains is what has allowed Ethereum and Bitcoin to evade SEC regulation. Although not all utility tokens operate on a fully decentralized blockchain at the time of an initial offering, many only achieve decentralization through gaining a mass of critical users after the token's facilitation or only after they receive the necessary access to capital through an ICO to complete development. Courts should be required to find concrete and specific instances of a promoter or issuer engaging in activities designed to improve the value of the asset itself in a transformative capacity. Updates to the underlying ledger technologies and networks on which digital assets exist should not automatically render them to be securities on the basis that those efforts are designed to lead to an expectation of profits. Although it may be true that improving the networks or updating the digital assets may provide some boost to its intrinsic value, the novel nature of digital assets requires continuous updates to retain functionality. To illustrate this, a car manufacturer who issues a recall on all cars of a certain make and model to update a defect in a safety feature would not then be giving back to its customers securities even though the cars may be worth more now that they are intrinsically safer.

²⁴⁵ See *Sec. & Exch. Comm'n. v. W. J. Howey Co.*, 151 F.2d 714, 715.

VI. Conclusion

The current regulatory ambiguity which exists in the crypto asset industry poses challenges for federal regulators, crypto asset offerors and purchasers of crypto assets alike. The novelty of digital assets requires flexible but comprehensive regulatory oversight for both the protection of the investing public as well as issuers of digital assets. Creating a test to distinguish between varying forms of crypto assets, such as the one proposed here, would provide much needed clarity in the industry and stop avoidable inhibitory enforcement actions from taking place. Regardless of the form that new regulatory guidance will take, it is necessary to fill the various regulatory gaps identified by FSOC and to provide certainty in a rapidly expanding market.

The Road to 2035; Developing Electric Vehicle Infrastructure to Accomplish Federal Goals

By: Molly Case¹

Introduction

The most common cars seen on the road today are Internal Combustion Engine Vehicles ("ICE"), which are powered by fuel.² One of the biggest advantages of ICE vehicles is that gas stations are abundant. This means that people can basically drive as far as they would like and there will always be available gas stations to refuel. The downside is that gasoline is a fossil fuel. In the United States, the transportation sector generates the largest share of our greenhouse gas emissions with a whopping 28%.³ Globally, transport emissions account for around one-fifth of global carbon dioxide emission.⁴ Accordingly, making the transportation sector more sustainable is an important part of meeting national and global goals on climate change.

The United States transportation system is in a period of rapid transformation towards replacing ICE vehicles with those that are electric. President Biden has set an ambitious goal for half of all new vehicles sold in 2030 to be zero-emissions vehicles ("ZEVs"), and many states have followed suit by setting their own EV fleet goals.⁵ Transitioning America's cars to EVs is an

¹ Juris Doctor, Rutgers University School of Law-Newark, 2024; B.A., Bennington College, 2014. Many thanks to Professor Randi Mandelbaum for her help in making this article possible.

² *New Analysis Suggests We Have Already Hit Peak Internal Combustion Engine*, YALE ENV'T 360 (June 11, 2021), <https://e360.yale.edu/digest/new-analysis-suggests-we-have-passed-peak-internal-combustion-engine>.

³ *Sources of Greenhouse Gas Emissions*, U.S. ENV'T PROT. AGENCY, <https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions> (last visited Sept. 15, 2022).

⁴ Hannah Ritchie, *Cars, Planes, Trains: Where Do CO2 Emissions From Transport Come From?*, OUR WORLD IN DATA (Oct. 6, 2020), <https://ourworldindata.org/co2-emissions-from-transport>.

⁵ *President Biden Announces Steps to Drive American Leadership Forward on Clean Cars and Trucks*, THE WHITE HOUSE (Aug. 5, 2021), <https://www.whitehouse.gov/briefing-room/statements-releases/2021/08/05/fact-sheet-president-biden-announces-steps-to-drive-american-leadership-forward-on-clean-cars-and-trucks/>.

important pathway to achieving the president's goal of reducing our emissions by 50-52% below what they were in 2005.⁶

However, as battery technology improves and automobile manufacturers introduce more and more EVs to the market, it has become apparent that many drivers will not transition to electric until charging infrastructure is vastly improved. They (rightfully) worry that they will have trouble finding a public charging station between point A and point B of their trip, as these charging stations are not nearly as plentiful or reliable as gas stations. A robust network of public chargers is a crucial tool in supporting our EV goals. A recent Edison Electric Institute and Institute for Electric Innovation report projects that, by 2030, nearly 12.9 million public charging ports will be needed in the U.S. to support nearly 26.4 million EVs.⁷ Today, fewer than 100,000 such ports are available to U.S. drivers, and many of these impose limits on their access and use.⁸

This Note evaluates how the federal and state governments, along with the free market should address our country's critical need for improved charging infrastructure to support the rapidly growing number of electric vehicles (EVs) on our roads. Section I of this article examines the current state of EV growth and charging technology and sets forth current Federal and State EV goals. Section II delves into the specific problems that the U.S. urgently needs to address in order to meet its clean energy goals. Section III explains the current proposed solutions, legislation, and funding available on both the Federal and State levels. Lastly, Section IV analyzes those governmental actions, discusses their shortcomings, and proposes a solution based upon the

⁶ *Id.*

⁷ *EEI Projects 26.4 Million Electric Vehicles Will Be on U.S. Roads in 2030*, EDISON ELECTRIC INSTITUTE (June 20, 2022), <https://www.eei.org/News/news/All/eei-projects-26-million-electric-vehicles-will-be-on-us-roads-in-2030>.

⁸ *Edison International Joins Nationwide EV Charging Effort*, EDISON INTERNATIONAL (Dec. 7, 2021), <https://energized.edison.com/stories/edison-international-joins-nationwide-ev-charging-effort>.

development of public-private partnerships (P3s), similar to what has been initiated in Europe and Canada.

I. Background

A. EV Growth

Battery electric vehicles (“EVs”) are undoubtedly our future. This trend is evident not only by a multitude of new federal and state goals, but also by the abundance of automakers like Hyundai, Ford, Mazda, Audi, BMW, Nissan, and Tesla (to name a few) introducing their own EVs to the market. Electric cars function by taking power from a grid when plugged in and storing electric energy into rechargeable batteries which power the motor.⁹ The three main types of electric vehicles are plug-in electric (“PEV” or purely electric), plug-in hybrid (mainly electric but also fuel powered), and hybrid-electric (mainly fuel powered with some electric).¹⁰ According to a report from the US Department of Energy, the sales of electric vehicles from 2020 to 2021 almost doubled from 308,000 to 608,000.¹¹ As of the second quarter of 2022, EV sales accounted for 5.6% of the total auto market.¹² Reuters estimates that by 2050 more than half of the vehicles on U.S. roads could be EVs.¹³

⁹ Marta Moses, *How Do Electric Cars Work?*, ÉLECTRICITÉ DE FRANCE (Jan. 8, 2020), <https://www.edfenergy.com/for-home/energywise/how-do-electric-cars-work>.

¹⁰ *Id.*

¹¹ *New Plug-in Electric Vehicle Sales in the United State Nearly Double from 2020 to 2021*, U.S. DEPT. OF ENERGY (Mar. 1, 2022), <https://www.energy.gov/energysaver/articles/new-plug-electric-vehicle-sales-united-states-nearly-doubled-2020-2021#:~:text=Sales%20of%20new%20light%2Dduty,electric%20vehicle%20sales%20in%202021>.

¹² *Growth Sector: Electric Vehicles Sales and the New Electric Economy Have Arrived*, FORBES (Sept. 24, 2022), <https://www.forbes.com/sites/qai/2022/09/24/growth-sector-electric-vehicles-sales-and-the-new-electric-economy/?sh=61d15294143a>.

¹³ Feilding Cage, *The Long Road to Electric Cars*, REUTERS (Feb. 7, 2022), <https://www.reuters.com/graphics/AUTOS-ELECTRIC/USA/mopanyqxwva/>.

B. Federal and State Goals

In the United States, the goal of shifting to electric vehicles is overwhelmingly evident. President Biden announced, through his National Climate Task Force, a national target for the United States to achieve a 50-52 percent reduction from 2005 levels in economy-wide net greenhouse gas pollution in 2030.¹⁴ To achieve this, the President signed an Executive Order that sets an ambitious goal of having half of all new vehicles sold in 2030 to be zero-emission vehicles.¹⁵ In the public sector, it also directs that the U.S. fleet of cars and trucks become all-electric by 2035.¹⁶ Specifically, the U.S. government can purchase only American-made, zero-emission passenger cars by 2027 and electric versions of other vehicles by 2035.¹⁷ Currently, only 1,799 of the 656,000-vehicle federal fleet are zero-emissions vehicles.¹⁸ Clearly, these federal agencies will need easy access to public EV charging stations. Yet, the White House has acknowledged they are “way behind” in creating a charging infrastructure.¹⁹

At the State level, California has emerged as the state with the strictest-in-the-nation new rules surrounding vehicle emission standards. Governor Gavin Newsom signed an executive order on September 23, 2020, requiring all new cars sold in California to be zero-emission vehicles by 2035.²⁰ The executive order directs the California Air Resources Board (“CARB”) and other state agencies to develop regulations and plans to achieve 100% zero emission off-road vehicles by

¹⁴ *Fact Sheet: President Biden Sets 2030 Greenhouse Gas Pollution Reduction Target Aimed at Creating Good-Paying Union Jobs and Securing U.S. Leadership on Clean Energy Technologies*, THE WHITE HOUSE (Apr. 22, 2021), <https://www.whitehouse.gov/briefing-room/statements-releases/2021/04/22/fact-sheet-president-biden-sets-2030-greenhouse-gas-pollution-reduction-target-aimed-at-creating-good-paying-union-jobs-and-securing-u-s-leadership-on-clean-energy-technologies/>.

¹⁵ Exec. Order No. 14057, 86 Fed. Reg. 70,935 (Dec 13, 2021).

¹⁶ *Id.*

¹⁷ *Id.*

¹⁸ *Biden Pledge to Make Federal Fleet Electric Faces Slow Start*, U.S. NEWS (Oct. 2, 2022, 10:41 AM), <https://www.usnews.com/news/business/articles/2022-10-02/biden-pledge-to-make-federal-fleet-electric-faces-slow-start>.

¹⁹ *Id.*

²⁰ CAL. EXEC. ORDER NO. 79-20 (Sept. 23, 2020), <https://www.gov.ca.gov/wp-content/uploads/2020/09/9.23.20-EO-N-79-20-Climate.pdf>.

2035 and similar regulations for trucks by 2045.²¹ California has been a national leader in EV technology and now they have backed it up with this executive order.²² CARB predicts California's new regulation will cut emissions by 50% between 2026 and 2040.²³ Since it passed, seventeen other states and the District of Columbia have adopted California's standards.²⁴

Under Section 177 of the Clean Air Act, other states may adopt California's standards, including one or both of its low emission vehicle ("LEV") standards and zero emission vehicle ("ZEV") regulations, but they may not develop independent standards.²⁵ As of August 2022, the following fourteen of the seventeen states have adopted both California's ZEV program as well as the LEV standards: Colorado, Connecticut, Maine, Maryland, Massachusetts, Minnesota, New Jersey, Nevada, New Mexico, New York, Oregon, Rhode Island, Vermont, Virginia, and Washington.²⁶ The remaining three states, Delaware, Pennsylvania, and the District of Columbia, are following California's LEV standards but have not yet adopted the ZEV program.²⁷ Together, all 17 of these states and the District of Columbia are referred to as "Section 177 states."²⁸

C. Charging Stations

While 80% of current U.S. EV owners charge their cars at home, a robust charging network is considered a prerequisite to making consumers comfortable with purchasing and relying on

²¹ *Id.*

²² *Id.*

²³ *California moves to accelerate to 100% new zero-emission vehicle sales by 2035*, CAL. AIR RES. BD. (Aug. 25, 2022), <https://ww2.arb.ca.gov/news/california-moves-accelerate-100-new-zero-emission-vehicle-sales-2035>.

²⁴ *State's that have Adopted California's Vehicle Standards under Section 177 of the Federal Clean Air Act*, CAL. AIR RES. BD. (May 13, 2022), https://ww2.arb.ca.gov/sites/default/files/2022-05/%C2%A7177_states_05132022_NADA_sales_r2_ac.pdf.

²⁵ *U.S. State Clean Vehicle Policies and Incentives*, CTR. FOR CLIMATE AND ENERGY SOL. (Aug. 2022), <https://www.c2es.org/document/us-state-clean-vehicle-policies-and-incentives/>.

²⁶ *Id.*

²⁷ *Id.*

²⁸ *Id.*

EVs.²⁹ Currently, EV chargers are classified into three categories: Level 1, Level 2, and Level 3, or DC fast chargers.³⁰ Level 1 chargers can be used with a 110-volt outlet, just like standard home plugs, but take a very long time to charge a vehicle battery.³¹ According to the U.S. Dept of Energy's Alternative Fuels Data Center, "...8 hours of charging at 120 V can replenish about 40 miles of electric range for a mid-size EV."³² Due to the length of time required by Level 1 charging, this is typically done overnight at home with an extension cord running to your car. However, even with that overnight charge you are only getting 30-40 miles.

Level 2 charging is the most popular in public charging stations, which is fine if you have some time to kill, but a Level 2 charger isn't going to get you back on the road quickly. They use a 240 V outlet and can charge an EV to 100% in about five hours.³³ Most EV owners buy a Level 2 charger to install in their home driveways, and they can also be found in commercial settings, such as shopping malls and parking garages. They make up about 80% of public charging outlets, costing between \$2,000 and \$5,000 to install.³⁴

Level 3 chargers are more commonly known as direct current fast chargers ("DC fast chargers") because of their rapid charging at 400 V or more. DC chargers can charge 80% of capacity in around 30-40 minutes and this technology only seems to be getting better.³⁵ Tesla has its own network of DC fast chargers which they have termed 'superchargers,' but they can only be

²⁹ Tina Bellon, *U.S. EV charging network is more robust but provider differences remain*, REUTERS (Jan. 31, 2022, 9:04 AM), <https://www.reuters.com/business/autos-transportation/us-ev-charging-network-is-more-robust-provider-differences-remain-2022-01-31/>.

³⁰ Tom Moloughney, *What Are The Different Levels of Electric Vehicle Charging?*, FORBES (Oct. 4, 2021), <https://www.forbes.com/wheels/advice/ev-charging-levels/>.

³¹ Courtney Lindwall, *Electric Vehicle Charging Explained*, NRDC (July 5, 2022), <https://www.nrdc.org/experts/patricia-valderrama/electric-vehicle-charging-101>.

³² *Developing Infrastructure to Charge Plug-In Electric Vehicles*, U.S. DEP'T OF ENERGY, https://afdc.energy.gov/fuels/electricity_infrastructure.html (last visited Nov. 25, 2020).

³³ Moloughney, *supra* note 30.

³⁴ Tina Bellon & Paul Leinert, *Five facts on the state of the U.S. electric vehicle charging networks*, REUTERS (Sept. 1, 2021, 1:08 PM), <https://www.reuters.com/world/us/five-facts-state-us-electric-vehicle-charging-network-2021-09-01/>.

³⁵ Moloughney, *supra* note 30.

used with Tesla cars. However, Tesla cars can be charged at other types of chargers with a special Tesla adapter.³⁶ These DC fast charging stations are significantly more expensive than Level 2 chargers, requiring more than \$100,000 in upfront capital.³⁷

Charge point operators (“CPOs”) recoup their initial installation investment by charging high rates for the use of their charging stations. While charging overnight at home will cost you approximately 16 cents per kilowatt hour, a PwC analysis says public Level 2 chargers cost around 44 cents and fast chargers up to 59 cents per kwh.³⁸ While the U.S. has a growing number of public EV charging ports, they are predominantly Level 2 ports that aren’t capable of fast charging.³⁹ According to the U.S. Department of Energy’s Alternative Fuels Data Center, there are currently about 50,000 public EV charging stations in the U.S., with a total of over 130,000 individual (EVSE) charging ports.⁴⁰ The total number of charging stations roughly includes 44,000 Level 2 stations with over 100,000 charging ports.⁴¹ However, as of January 2023, according to the Department of Energy, only 6,600 publicly available Level 3 DC fast-charging stations were operating in the United States and 1,650 of them were for Tesla’s, and thus incompatible for other makes of vehicle.⁴² Fast charging options are essential to meeting the U.S. EV goals, as drivers want to be able to minimize their time spent charging while on long drives. Lack of public fast charging infrastructure is a major deterrent from purchasing an electric vehicle.

³⁶ U.S. DEP’T OF Energy, *supra* note 32.

³⁷ Bellon & Leinert, *supra* note 34.

³⁸ *Id.*

³⁹ *Id.*

⁴⁰ Steve Loveday, *A Comprehensive Guide to U.S. EV Charging Networks*, U.S. NEWS (Jan. 4, 2023, 5:31 PM), <https://cars.usnews.com/cars-trucks/features/ev-charging-stations>.

⁴¹ *Number of Public Electric Vehicle Charging Stations in US as of January 13, 2022*, STATISTA, <https://www.statista.com/statistics/416750/number-of-electric-vehicle-charging-stations-outlets-united-states/> (last visited Oct. 4, 2022).

⁴² Sebastian Blanco & Beth Nicols, *EV Charging Stations: Where to Find Them, What Type You Need, How to Pay*, CAR AND DRIVER (Dec. 3, 2019), <https://www.caranddriver.com/news/a30031153/ev-charging-guide/>.

II. Problems

Any shift in how daily life is carried out requires adjustments which create new problems to solve. To incentivize the purchase of EVs, a number of these growing problems must be conquered before consumers will be comfortable on the road. While the primary issue is the lack of charging infrastructure and stations, there exist troves of other, more minor, issues which taken together pose a major obstacle. These include a lack of trust in the reliability of charging stations operating correctly, prohibitive costs of electric vehicles and home charging equipment, zoning and permitting problems preventing charger installation, interoperability between different makes of EVs and chargers, the capacity of state power grids, and supply chain problems. This section will explore some of these problems in detail.

A. Interoperability

First, every EV must be able to rely on electricity from a public charging station while driving far from home. However, currently charging stations are not interoperable which poses a serious problem. For example, not all charging stations are compatible with all models of EVs, they all use different software and payment methods requiring multiple different applications to be downloaded to your cell phone, they are not always functioning, and they don't charge at the same speed.⁴³ In other words, they are far from convenient or reliable for drivers to use. These charging stations must be standardized to achieve interoperability amongst the key system components- the vehicle, charging station, charging network, the payment and software systems that support them, and the grid.

⁴³ Niraj Chokshi, *A Frustrating Hassle Holding Electric Cars Back: Broken Chargers*, N.Y. TIMES (Aug. 16, 2022), <https://www.nytimes.com/2022/08/16/business/energy-environment/electric-vehicles-broken-chargers.html>.

The dominating non-Tesla CPOs in the United States are operated by EVgo, ChargePoint, Blink Charging, EVconnect, Greenlots, and Electrify America. Significant differences in reliability and performance exist between these providers. Many of these charging stations lag behind gas stations in terms of service offerings such as food, restrooms and weather protection. Some of these CPOs fail to inform customers about how long the charging process will take and how much it will cost. Currently, each CPO's app shows only its own available charging stations and allows payment only within this CPO's charging networks. While third-party apps for navigating all charging stations in the country are available, none offer payment across all networks so a user must still download many different apps, making accounts and sharing their payment information on each one.⁴⁴ Customers often aren't getting the experience they should be, and making these CPOs attractive, interoperable, and efficient is crucial to making EVs attractive to more customers.

B. Range Anxiety

Studies have shown that when purchasing a new vehicle, the single greatest deterrent from going electric is the buyer's concern over driving range and lack of charging infrastructure.⁴⁵ Drivers fear that electric vehicles have insufficient range to reach their destinations and will strand drivers. A conundrum known as range anxiety. Typically, range anxiety results when life throws an EV owner an unexpected curveball and alters the daily routine. For example, a last-minute activity may be problematic if one's battery was not fully charged overnight. This could cause someone to have to decline the activity or to delay it until one is able to find a charging station and

⁴⁴ *US EV Charging Infrastructure – How Fast and How Convenient?*, UMLAUT (Jan. 31, 2022), <https://www.umlaut.com/en/stories/us-ev-charging-infrastructure-how-fast-and-how-convenient>.

⁴⁵ *Americans Cite Range Anxiety, Cost as Largest Barriers for New EV Purchases*, THE DRIVE (Feb. 26, 2019), <https://www.thedrive.com/news/26637/americans-cite-range-anxiety-cost-as-largest-barriers-for-new-ev-purchases-study>.

recharge the battery of the EV. If the task cannot wait, the person is left hoping that the battery is sufficiently charged until a charging station can be found and before they are left stranded on the side of the road. Even worse, if this happens in a cold climate, the person may be stranded with no heat.

Fortunately, there have been significant improvements with lithium-ion batteries and as a result EV range has increased. There are now many light-duty EVs capable of completing a range of between 200–330 miles on a single charge.⁴⁶ Yet, while increased battery capacity helps with range anxiety, it does not cure it. DC fast chargers must be as available, and as easy to operate, as gas stations are today. DC fast chargers also must be evenly distributed across the country. Currently, chargers are distributed very unevenly across the country, with California having nearly the same amount of charging stations as the 39 states with the lowest count combined.⁴⁷ To compare, the European Union currently has nearly 270,000 EV charging ports, or around 62 charging points per 100,000 inhabitants whereas the United States has roughly 37 ports on the same per-capita basis.⁴⁸

C. Grid

The U.S. needs electric utilities and regional grid operators to invest in more energy capacity and robust transmission and distribution infrastructure.⁴⁹ Grid operators also must invest in grid resilience, so power outages have less impact⁵⁰ and electricity can be restored more quickly if it does go out. Since vehicles are such durable goods—the average ICE car or light truck remains

⁴⁶ Cameron Feil, *What is EV Range Anxiety and How Can We Overcome It?*, GEOTAB (June 21, 2022), <https://www.geotab.com/blog/range-anxiety/>.

⁴⁷ Bellon & Leinert, *supra* note 37.

⁴⁸ *Id.*

⁴⁹ Samantha Houston, *Can the Electric Grid Handle EV Charging?*, UNION OF CONCERNED SCIENTISTS (Sept. 12, 2022, 8:00 AM), <https://blog.ucsusa.org/samantha-houston/can-the-electric-grid-handle-ev-charging>.

⁵⁰ *Id.*

on the road for over 12 years and some of them are on the road much longer than that, not everyone will be purchasing an EV at once.⁵¹ In a realistic scenario, new vehicle sales will ramp up to 100% EVs between now and 2035 to meet state and federal greenhouse gas reduction goals, but the U.S. will not be close to 100% EVs on roads until around 2050. Currently, experts predict that our power grids can handle the EV's bought in the next few years, however, our grids are ill-prepared for the huge influx of EV's expected to occur when our countries infrastructure is actually in place. Utility companies must become better prepared to ensure they will have the grid capacity to support half of all vehicle purchases to be EV's by 2030.

D. Reliability

Another failure of public charging stations has been the tendency of companies to “set it and forget it.”⁵² A University of California-Berkeley study found that while San Francisco Bay Area charger operators said they were up and running 95-98% of the time, only 72.5% of charging equipment was functional.⁵³ Many are placed in parking lots or in front of retail stores where there is often no one to turn to for help when something goes wrong. Problems include broken screens and “buggy” software.⁵⁴ Some stop working mid-charge, while others never start in the first place.

Most issues arise with the inability to detect maintenance problems swiftly. Often it takes a customer's complaint to trigger a technician call, which takes time and can be expensive. The company rarely owns and operates the chargers it installs on behalf of commercial businesses, and they only provide maintenance for as long as the charger is under warranty, and even then, you must still file a claim.⁵⁵ That model is rife with problems because it places responsibility on

⁵¹ *Id.*

⁵² Chokshi, *supra* note 43.

⁵³ Matt McFarland, Curt Merrill, & Renée Rigdon, *Electric Vehicle Charging Gaps*, CNN (Sept. 30, 2022), <https://www.cnn.com/2022/09/30/us/electric-vehicle-charging-gaps-dg>.

⁵⁴ *Id.*

⁵⁵ *Id.*

property owners, who may not have the expertise or commitment needed to manage the equipment.⁵⁶ Additionally, unlike Tesla where there are always multiple chargers so if one charger is broken, another one is likely to be available and working, many of these other CPOs place just one or two chargers, which could easily lead to an EV driver with a low battery being stranded at an inoperable charger.⁵⁷

E. Shortcomings of Previous EV Legislation

To date, there have been few federal legislative efforts proposed, and those that have been put forth have not been passed. For example, New York Congresswoman Alexandria Ocasio-Cortez and Michigan Congressman Andy Levin introduced the EV Freedom Act, H.R. 5770, in the 116th Congress in February 2020.⁵⁸ Taking note of the importance of EV chargers for the expanding EV market, the Act aimed to establish a national network of EV charging stations.⁵⁹ The focus of the bill was to develop an EV charging network along the interstate highway system so anyone can drive from any point A to any point B along the national interstate system in the United States. The bill stated, "failure to access publicly accessible electric vehicle chargers will prevent the wider adoption of electric vehicles and, therefore, hinder progress towards a more sustainable transportation system."⁶⁰ The bill ultimately died, as electric vehicle adoption was not towards the forefront of the Trump administration's agenda.⁶¹

However, through the proposal of this bill, legislators were able to realize that developing a larger EV charging infrastructure would lead to less EV range anxiety and more EV sales, thus driving the transportation sector towards sustainability. The action phase of the bill called for a

⁵⁶ *Id.*

⁵⁷ *Id.*

⁵⁸ Electric Vehicle Freedom Act, H.R. 5770, 116th Cong. (2020).

⁵⁹ *Id.*

⁶⁰ *Id.*

⁶¹ *Id.*

grant program which would award grants through the Secretary of Energy and Secretary of Transportation to eligible entities to implement this plan.⁶² Some of the eligible entities included a state, a transit agency, port authority, Native American tribe, for-profit businesses, and non-profit organizations. The bill also required the Transportation Research Board of the National Academy of Sciences to study different options for financing the project, such as partnering with private companies and gas stations.⁶³ Mostly, the bill illustrated the role the federal government could play in helping create an EV charging infrastructure, paving the way for future federal EV legislation. Due to the Biden administration's prioritization of climate change, legislation such as the EV Freedom Act will be taken much more seriously and pursued in support of Biden's environmental goals.

As is abundantly clear, the infrastructure we currently have in place is woefully insufficient. Private CPOs are not reasonably managing their equipment, charging stations are not being placed where they are most needed, and communication between commercial property owners and CPOs is not effective. In addition, the Trump administration did not take climate change seriously and, therefore, did not advance legislation which could have put us in a much better position of meeting President Biden's EV objectives.

III. Current Proposed Solutions

A. Federal

President Biden has proven himself to be a big proponent of EVs, by signing into law incentives to encourage consumers to buy them and companies to build them. Analyzing these federal actions is helpful in our understanding of what gaps are left in the infrastructure, and how

⁶² *Id.*

⁶³ *Id.*

the U.S. should address those gaps moving forward. Focusing on three recent federal actions; the Bipartisan Infrastructure Law, the Inflation Reduction Act, and the CHIPS and Science Act, one can get a realistic understanding of what the federal government is capable of propounding and what will be left behind. It is useful to understand this legislation because any proposed plan to better effectuate infrastructure rollout will need to take advantage of these actions and work with any constraints imposed by them.

1. Bipartisan Infrastructure Law

The pivotal federal action taken to promote electric vehicles and their supporting infrastructure has been the Bipartisan Infrastructure Law (“BIL”), which was signed into law by President Biden on November 15, 2021.⁶⁴ Most noteworthy, the BIL contains the new National Electric Vehicle Infrastructure (“NEVI”) Formula Program.⁶⁵ The program will provide nearly \$7.5 billion dollars over five years as an effort to put the United States on a path to a nationwide network of 500,000 EV chargers, particularly along the Interstate Highway System, by 2030.⁶⁶ Additionally, it will help ensure a convenient, reliable, affordable, and equitable charging experience for all users through the program’s guidelines.⁶⁷

Under this program, each State (including the District of Columbia and Puerto Rico) must annually submit an EV Infrastructure Deployment Plan (“Plan”) to the Joint Office of Energy and Transportation (“Joint Office”) for approval, describing how they will use their NEVI funds in accordance with the guidance set out by the federal government.⁶⁸ This Plan is reviewed by the

⁶⁴ FED. HIGHWAY ADMIN., U.S. DEPT. OF TRANSP., *The National Electric Vehicle Infrastructure (NEVI) Formula Program Guidance* (2023).

https://www.fhwa.dot.gov/environment/alternative_fuel_corridors/nominations/90d_nevi_formula_program_guidance.pdf.

⁶⁵ *Id.* (Authorized under Paragraph (2) under the Highway Infrastructure Program heading in Title VIII of division J of the BIL, enacted as the Infrastructure Investment and Jobs Act).

⁶⁶ *Id.* at 5.

⁶⁷ *Id.* at 1.

⁶⁸ *Id.* at 6.

Joint Office and must be approved by the Federal Highway Administration (FHWA) before a State's Department of Transportation ("DOT") can distribute any funds.⁶⁹

On September 27, 2022, the first plans for all 50 States, the District of Columbia and Puerto Rico were approved.⁷⁰ With this approval, all states now have access to all Fiscal Year 22 and Fiscal Year 23 NEVI formula funding, totaling more than \$1.5 billion.⁷¹ They may use their NEVI formula funding for any project which directly relates to the charging of a vehicle, including "upgrade of existing and construction of new EV charging infrastructure, operation and maintenance costs of these charging stations, installation of on-site electrical service equipment, community and stakeholder engagement, workforce development activities, EV charging station signage, data sharing activities, and related mapping analysis and activities."⁷² Additionally, each State, Territory, or District can be reimbursed for reasonable and necessary costs incurred while developing their Plan, including staffing and activities related to the development of the Plan and development of the Plan itself.⁷³

The NEVI Formula Program directs the Federal Highway Administration ("FHWA") to apportion NEVI funding among States (including DC and Puerto Rico) on a formula basis.⁷⁴ Each State receives a share of program funding equal to the State's share of the combined amount that FHWA distributes in federal-aid highway apportionments and Puerto Rico Highway Program funding.⁷⁵ All in all, each state's distribution of NEVI funds is meant to cover up to 80% of NEVI project costs and it will be up to the state to determine funding for the estimated remaining 20%

⁶⁹ *Id.* at 11.

⁷⁰ U.S. DEP'T OF TRANSP., *All Fifty States Plus D.C. and Puerto Rico Greenlit to Move EV Charging Networks Forward, Covering 75,000 Miles of Highway* (2022).

⁷¹ *Id.*

⁷² *Id.*

⁷³ *Id.*

⁷⁴ *National Electric Vehicle Infrastructure Formula Program*, U.S. DEP'T OF TRANSP. (Feb. 10, 2022), https://www.fhwa.dot.gov/bipartisan-infrastructure-law/nevi_formula_program.cfm

⁷⁵ *Id.*

of project costs.⁷⁶ This windfall of funds and relative pecuniary freedom should quickly kickstart our country's creation of interconnected EV-friendly roadways, and should be supported by all means available.

The BIL lays out certain guidelines regarding how these distributed funds should be allocated, including the requirement that states must work towards setting up an Alternative Fuel Corridor ("AFC").⁷⁷ The AFC's of each state are to connect and build a national network of plug-in EV charging along national system corridors.⁷⁸ States nominate heavily trafficked highways to designate as AFC's and the FHWA solicits the nominations.⁷⁹ The exact location of new chargers being built is largely up to the States, but the NEVI Formula Program requires states to build their network of EV charging stations along these designated AFC highways and to be located within one travel mile of that highway.⁸⁰ States may request a waiver from this requirement, but they will only be granted under very limited circumstances on a case-by-case basis.⁸¹ Reasons to grant a waiver will need to be related to grid capacity, geography, equity, or extraordinary cost.⁸² Other requirements of the Plans submitted by states promulgate that each charging station include at least four DC fast-speed plug-ins and chargers that must be functional 97% of the time.⁸³ The chargers also must be able to connect to more than one auto brand, addressing the problem of interoperability.⁸⁴ Once a state's Alternative Fuel Corridors are fully built out, meeting the

⁷⁶ *Id.*

⁷⁷ *Id.*

⁷⁸ *Id.*

⁷⁹ *Id.*

⁸⁰ *Id.*

⁸¹ Riley Beggin, *Biden Administration Seeks Waiver of 'Buy American' Rules for EV Chargers*, NORTH BAY BUSINESS JOURNAL (Sept. 2, 2022), <https://www.northbaybusinessjournal.com/article/industrynews/biden-administration-seeks-waiver-of-buy-american-rules-for-ev-chargers/>.

⁸² *Id.*

⁸³ National Electric Vehicle Infrastructure Formula Program, 87 Fed. Reg. 37262 (June 22, 2022).

⁸⁴ *Id.*

requirements, then that state may use NEVI Formula Program funds for EV charging infrastructure on any public road or other publicly accessible location.⁸⁵

To promote equitable charging across the country, the BIL is encompassed within the Biden administration's Justice40 Initiative. The Justice40 Initiative is a government-wide goal of delivering 40 percent of the overall benefits of relevant federal investments to disadvantaged communities.⁸⁶ The NEVI Program funds qualify as such a federal investment and therefore must comply with this mandated objective. Likely this will come into play after states set up their Alternative Fuel Corridors to meet the programs requirements, after that they will have greater flexibility to allocate their 40% to deliver on Justice40.⁸⁷

Another provision of the BIL, called "Build America, Buy America," presents challenges which will require significant strategizing and resource allocation to overcome. In an effort to strengthen domestic manufacturing, the Buy America requirements for steel and iron apply to all FHWA-funded projects.⁸⁸ These provisions require that all steel and iron that are permanently incorporated into a project must be produced in the United States unless a waiver is granted, including predominantly steel and iron components of a manufactured product.⁸⁹

With our country's supply chain shortages and semiconductor shortages, the Buy America provision has proven itself an impossible rule to adhere to when it comes to materials needed for EV charging infrastructure. Already, the DOT and other agencies have requested waivers to the rules for federally funded electric-vehicle chargers to more rapidly roll out the infrastructure

⁸⁵ *NEVI Formula Program*, PENN. DEP'T OF TRANSP., <https://www.penndot.pa.gov/ProjectAndPrograms/Planning/EVs/Pages/NEVI.aspx> (last visited Sept. 25, 2022).

⁸⁶ *Justice40*, THE WHITE HOUSE (2022), <https://www.whitehouse.gov/environmentaljustice/justice40/>.

⁸⁷ *Justice40 Initiative*, U.S. DEP'T OF TRANSP., <https://www.transportation.gov/equity-Justice40> (last visited Nov. 20, 2022).

⁸⁸ *Set forth in 23 U.S.C. § 313 and 23 C.F.R 635.410. FHWA's Buy America Q and A for Federal-aid Program*, U.S. DEP'T OF TRANSP. (Nov. 9, 2022), https://www.fhwa.dot.gov/construction/contracts/buyam_qa.cfm.

⁸⁹ 23 U.S.C. § 313 and 23 C.F.R § 635.410. (As applied to products other than iron and steel, the term "produced" in 23 U.S.C. § 313 includes physical final assembly and manufacturing processes.)

needed to scale up EV adoption.⁹⁰ The Buy America provisions allow agencies to apply for waivers if domestic procurement would increase costs by 25 percent, is “inconsistent with the public interest” or if the product is not made in the U.S. in “sufficient and reasonably available guidance,” according to the White House guidance.⁹¹ DOT issued a proposal in August 2022 that would, if finalized, require federally funded EV chargers to be built in the United States starting in January 2023 and have more than 55% domestic content by January 2024.⁹² If passed, this will be an important step to give our country more time to get set up to build EV’s domestically. To get a sense of how difficult this is to accomplish, requests for waivers now total more than 30, according to tracking by the Alliance for American Manufacturing.⁹³

Currently, the U.S. lags other countries in its manufacturing capabilities. China accounted for over half of the global steel output in 2020, towering over the U.S.’ four percent, and the Asia Pacific region is expected to dominate the market for metals used in EV chargers.⁹⁴ Countries across Europe also are setting up networks of fast EV chargers, and market research firm has estimated that the European continent is on track to amass 30 percent of the market share for metals used in charging infrastructure.⁹⁵ Although eleven manufacturers have said they can produce EV chargers that comply with Buy America standards, only three of them — ChargePoint, FreeWire Technologies and Rhombus — said earlier this year that they could produce direct current fast charging (DCFC) products, which are what is required if they intend to use NEVI Formula

⁹⁰ *Notice of Proposed Waiver of Buy America Requirements for Electric Vehicle Chargers*, FEDERAL REGISTER (Aug. 31, 2022), <https://www.federalregister.gov/documents/2022/08/31/2022-18831/notice-of-proposed-waiver-of-buy-america-requirements-for-electric-vehicle-chargers>.

⁹¹ *Buy America*, FED. TRANSIT ADMIN., <https://www.transit.dot.gov/buyamerica> (last visited Nov. 20, 2022).

⁹² *Notice of Proposed Waiver of Buy America Requirements for Electric Vehicle Chargers*, FED. REG. (Aug. 31, 2022), <https://www.federalregister.gov/documents/2022/08/31/2022-18831/notice-of-proposed-waiver-of-buy-america-requirements-for-electric-vehicle-chargers>.

⁹³ DEP’T OF TRANSP., *supra* note 70.

⁹⁴ Valerie Yurk, ‘Buy America’ Takes a Back Seat in Drive to Build EV Charging Stations, ROLL CALL (Oct. 23, 2022), <https://rollcall.com/2022/10/23/buy-america-takes-a-back-seat-in-drive-to-build-ev-charging-stations/>.

⁹⁵ *Id.*

funding.⁹⁶ If the Buy America waiver proposed by the DOT and other agencies is accepted, it would immediately halt Buy America requirements for the chargers and then slowly restore the requirements to give manufacturers more time to increase production. This would allow an initial period for America EV charging manufacturing to ramp up and build out U.S. manufacturing facilities. Ultimately, the FHWA will make a determination as to whether the waiver will be granted.⁹⁷

Lastly, the BIL includes investments by the United States Postal Service in \$3 billion worth of zero-emission delivery vehicles and their charging equipment.⁹⁸ The postal service is the United States' largest fleet, so this should have a great impact on reduction of its carbon footprint.⁹⁹ The law also contains a provision allocating \$1 billion in funding for heavy-duty vehicles, which eliminate diesel exhaust emissions and particularly improve the air quality for urban communities and young children.¹⁰⁰

2. Inflation Reduction Act

In addition to the NEVI Formula program which, if successfully implemented, will encourage consumers to buy EVs by building out AFC highways, President Biden has made other funding available to foster the development of the EV industry in the U.S.¹⁰¹ The Inflation Reduction Act (“IRA”) (signed into law August 16, 2022) introduces new funding which has encouraged consumers to buy EVs and incentivized domestic EV manufacturing. According to

⁹⁶ *Id.*

⁹⁷ *FHWA's Buy America Q and A for Federal-aid Program*, DEP'T OF TRANSP. (Nov. 9, 2022), https://www.fhwa.dot.gov/construction/contracts/buyam_qa.cfm.

⁹⁸ *Biden-Harris Administration Announces Historic Investment to Electrify U.S. Postal Service Fleet*, THE WHITE HOUSE (Dec. 20, 2022), <https://www.whitehouse.gov/briefing-room/statements-releases/2022/12/20/biden-%E2%81%A0harris-administration-announces-historic-investment-to-electrify-u-s-postal-service-fleet/>.

⁹⁹ *Id.*

¹⁰⁰ *Id.*

¹⁰¹ *Id.* (These sources include a \$2.5 billion discretionary grant program for charging and fueling infrastructure, which will ensure charger deployment meets the Biden Administration's priorities, including equity commitments to increase EV charging access in rural, underserved, and overburdened communities.).

President Joe Biden, the IRA is "the most important climate initiative ever, ever, ever."¹⁰² The IRA will help incentivize the purchase of electric vehicles by bringing down their sticker price through a \$7,500 tax credit when purchasing new electric vehicles, however, to be eligible for the new credit, vehicles and consumers must meet certain requirements.¹⁰³

To complicate the eligibility qualifications, to receive the full tax credit amount, a vehicle must have critical minerals that were extracted or processed in the U.S. or countries with which the U.S. has a free trade agreement or use critical minerals that were recycled in North America.¹⁰⁴ Furthermore, final assembly must take place in North America and only cars under \$55,000 are eligible.¹⁰⁵

Some of the guidelines have also spurred confusion amongst interested consumers.¹⁰⁶ On the consumer side, these new requirements are complex, and can be hard for consumers to parse out. The income cap to be eligible for the credit is \$150,000 for single filers,¹⁰⁷ and the pay out of these incentives is further complicated because some occur as rebates upon EV purchase, while others must be claimed after the fact when a person files their taxes. Accordingly, an EV buyer does not end up owing \$7,500 in income taxes, they will not benefit from the full incentive and only receive a credit up to the amount they owe to the IRS. The IRA is also making an additional \$3 billion accessible through the Neighborhood Access and Equity Grant Program to advance transportation equity and environmental justice initiatives, including supporting access to transportation for low-income and historically marginalized communities.¹⁰⁸ Although not a

¹⁰² Joseph R. Biden, U.S. President, Address at The White House (Sept. 1, 2022), <https://www.c-span.org/video/?522563-1/president-biden-calls-americans-defend-threats-democracy>.

¹⁰³ *Id.*

¹⁰⁴ *Id.*

¹⁰⁵ *Id.*

¹⁰⁶ *Inflation Reduction Act EV Incentives, Explained*, PLUG IN AMERICA, <https://pluginamerica.org/why-go-plug-in/state-federal-incentives/inflation-reduction-act-ira-ev-incentives-explained/>.

¹⁰⁷ *Id.*

¹⁰⁸ Neighborhood Access and Equity Grants Act, H.R. 5267, 117th Cong. (2021).

substantial amount of money, it signifies an important first step towards bringing equitable low-carbon transportation to explicitly low-income communities.

3. CHIPS and Science Act

One last beneficial federal action worth examining is the Creating Helpful Incentives to Produce Semiconductors for America (“CHIPS”) and Science Act of 2022.¹⁰⁹ This Act will bolster U.S. leadership in semiconductors, providing \$52.7 billion for American semiconductor research, development, manufacturing, and workforce development.¹¹⁰ The Department of Energy is funding \$7 billion to support an end-to-end domestic supply chain for domestic EV battery manufacturing.¹¹¹

In addition to these federal incentives encouraging drivers to buy EVs and companies to manufacture their parts domestically, the government must also invest in ideas which will accomplish the Executive Order calling for all federal vehicle acquisitions to be zero-emission vehicles by 2035, affecting 380,000 vehicles within federal fleets as they become subject to replacement. The federal government will not only need to attain these vehicles in conjunction with the Buy America guidelines, but they will need to set up private governmental charging ports at each of the federal agencies to support the new EVs.

Currently, the U.S. General Services Administration (“GSA”) has estimated that the federal government may need over 100,000 charging ports because they expect federal agencies to need one charging port for every two electric vehicles acquired.¹¹² As of March 2022, federal agencies

¹⁰⁹ *CHIPS and Science Act Will Lower Costs, Create Jobs, Strengthen Supply Chains, and Counter China*, THE WHITE HOUSE (Aug. 9, 2022), <https://www.whitehouse.gov/briefing-room/statements-releases/2022/08/09/fact-sheet-chips-and-science-act-will-lower-costs-create-jobs-strengthen-supply-chains-and-counter-china/>.

¹¹⁰ *Id.*

¹¹¹ DEP’T OF TRANSP., *supra* note 70. (One more noteworthy incentive is the Reduction of Truck Emissions at Port Facilities Program, which will provide \$400 million in competitive funding to reduce truck idling and emissions at ports, including through the advancement of port electrification).

¹¹² *Federal Vehicle Fleets*, U.S. GOVT. ACCOUNTABILITY OFF. (Oct. 20, 2022), <https://www.gao.gov/products/gao-23-105635#:~:text=In%20December%202021%2C%20the%20Biden,they%20need%20to%20be%20replaced.>

owned and operated over 4,000 charging ports, based out of about 1,050 charging locations, in less than 500 cities.¹¹³ The Biden Administration's proposed budget for Fiscal Year 23 includes \$300 million for GSA and \$457 million for other agencies to help facilitate the Administrations goals.¹¹⁴

While there are further actions being taken at the federal level to fund our growing fleet of EV's, the funds and regulations outlined above represent the most impactful actions. Particularly, the new NEVI Formula program gives state and local governments a powerful tool to shape U.S. charging infrastructure buildout, if executed properly. With this funding covering an estimated 80% of a project's eligible costs, the remaining estimated 20% is likely to come from public or private sources.¹¹⁵ These sources should adhere to the BIL guidelines, while considering constantly changing incentives stemming from the Inflation Reduction Act and the CHIPS and Science Act.

B. State

There are many smaller-scale plans being put in place on the state level to incentivize both the purchase of electric vehicles and the building out of infrastructure in various communities. California quickly emerged as the leading state when it comes to electric vehicles. They implemented aggressive EV goals and policies early on and have remained at the forefront of EV technology. The California Air Resources Board ("CARB") approved the trailblazing Advanced Clean Cars II rule on August 25, 2022, which sets California on a path to rapidly grow the zero-emission car market and deliver cleaner air and massive reductions in climate-warming pollution.¹¹⁶ The rule establishes a year-by-year roadmap so that by 2035 100% of new cars and

¹¹³ *Id.*

¹¹⁴ *GSA Awards New Blanket Purchase Agreements for Electric Vehicle Supply Equipment Procurement*, U.S. GEN. SERV. ADMIN. (May 3, 2022), <https://www.gsa.gov/about-us/newsroom/news-releases/gsa-awards-new-blanket-purchase-agreements-for-electric-vehicle-supply-equipment-procurement-05032022>.

¹¹⁵ *National Electric Vehicle Infrastructure Formula Program*, U.S. DEPT. OF TRANSP. (Feb. 10, 2022), https://www.fhwa.dot.gov/bipartisan-infrastructure-law/nevi_formula_program.cfm.

¹¹⁶ *Advanced Clean Cars II Regulations: All New Passenger Vehicles Sold in California to be Zero Emissions by 2035*, CALIF. AIR RES. B.D, <https://ww2.arb.ca.gov/our-work/programs/advanced-clean-cars-program/advanced-clean-cars-ii> (last visited Dec. 1, 2022).

light trucks sold in California will be zero-emission vehicles, including plug-in hybrid electric vehicles.¹¹⁷ California surpassed one million zero-emission vehicles (ZEV) sold in 2021 and leads the country in all ZEV market metrics including the highest level of public funding, the largest EV market share percentage, and the most extensive public charging infrastructure.¹¹⁸

Many states have come to look towards California for guidance in developing their own state plans, both for the NEVI Program funding and more general actions, to effectively rollout EV charging infrastructure. For example, in New York, the Climate Action Council's Draft Scoping Plan has recommended that New York adopt California's Advanced Clean Cars II regulation.¹¹⁹ In total, there are 17 states which have adopted all or part of California's automotive emissions regulations, as allowed under Section 177 of the California Clean Air Act, and have incorporated them into their NEVI plans.¹²⁰

In California's five-year plan submitted to claim their \$56,789,406 in NEVI program funding for fiscal year 2022, the state detailed their intention to use their first two years of funding to "primarily provide connectivity for passenger vehicles throughout the state, complementary to state investments."¹²¹ Implementation will focus on ensuring ZEV infrastructure will meet the needs of the growing ZEV market, accelerating deployment, and ensuring equitable outcomes. California also plans to develop a competitive grant-funding opportunity to seek applications for

¹¹⁷ *Id.*

¹¹⁸ *Id.*

¹¹⁹ *Governor Hochul Drives Forward New York's Transition to Clean Transportation*, NY STATE (Sept. 29, 2022), <https://www.governor.ny.gov/news/governor-hochul-drives-forward-new-yorks-transition-clean-transportation>.

¹²⁰ *States That Have Adopted California's Vehicle Standards Under Section 177 of the Federal Clean Air Act*, CALIF. AIR RES. BOARD, https://ww2.arb.ca.gov/sites/default/files/202205/%C2%A7177_states_05132022_NADA_sales_r2_ac.pdf. (last visited Mar. 10, 2023) (including New York, Massachusetts, Vermont, Maine, Pennsylvania, Connecticut, Rhode Island, Washington, Oregon, New Jersey, Maryland, Delaware, Colorado, Minnesota, Nevada, Virginia, and New Mexico).

¹²¹ Lynn Haug, *California Agencies Issue State Plan for Implementing NEVI Program*, SCHNEIDER HARRIS DONLAN, <http://eslawfirm.com/blog/california-agencies-issue-state-plan-implementing-national-e> (last visited Nov. 20, 2022).

funding to install DC fast chargers along their alternative fuel corridors.¹²² Applicants will be invited to submit proposals targeting gaps in the network or proposing upgrades to existing chargers.¹²³ Their NEVI plan also considers California's extreme diversity when it comes to climate, terrain, and land use.¹²⁴

All other states presented very similar plans, however their plans had to vary from California's in certain ways. First of all, California's plan states that an analysis of its grid "suggests the state will be able to handle millions of EVs in the near term."¹²⁵ This is not the case in most states, who note in their plans that their power grid does not have the current capacity to support EVs as they become more common, and their resources will need to be directed at that problem. States must include in their plans how they intend to secure funding for the remaining estimated 20% of project costs, which varied between plans. Colorado, for example, expects the developer or host of each charging site to provide the 20% matching funds, but it said in its Plan that it is open to allowing the use of other state funds to offset some portion of the required matching funds.¹²⁶ Another concern is meeting the Buy America requirements with the United States' supply chain and semiconductor shortages, plus the lack of domestic DC fast charging manufacturing facilities. For example, in its NEVI plan, New Jersey states that this requirement that EV supply equipment contain more than 55% domestic content and be manufactured in the U.S. "may delay implementation by several years."¹²⁷

Outside of their State-specific NEVI plans, several state legislatures have taken state

¹²² California's Deployment Plan for the NEVI Program STATE OF CALIF., <http://rebuildingca.ca.gov/static/2022-ca-nevi-deployment-plan-a11y-8acc5dc59e4a797c873f28e1bfb74805.pdf> (last visited Jan. 6, 2023).

¹²³ *Id.*

¹²⁴ *Id.*

¹²⁵ *Id.*

¹²⁶ Dan Zukowski, *State NEVI Plans raise concerns about EV Charging Infrastructure Rollout*, SMART CITIES DIVE (Aug. 23, 2022), <https://www.smartcitiesdive.com/news/state-plans-concerns-national-ev-charging-infrastructure-nevi/630035/>.

¹²⁷ *NJ's NEVI Plan*, STATE OF N.J. (Aug. 1, 2022), <https://dep.nj.gov/wp-content/uploads/drivegreen/pdf/nevi.pdf>.

action to ease transition to EV's. One report finds that all 50 states and the District of Columbia took actions related to electric vehicles and charging infrastructure during the first quarter of 2022, with the greatest number of actions relating to rebate programs, grant programs, rate design for vehicle charging, and state procurement of electric vehicles.¹²⁸ The most active states were reported to be Massachusetts, Illinois, California, New York, Minnesota, and Hawaii.¹²⁹ Activity in these states was largely driven by numerous bills related to electric vehicles.¹³⁰ One of the most well-known and popular actions has been enacting state tax credits or cash rebates for EV purchases which can be claimed in addition to the federal tax EV credit.¹³¹ EV's are relatively new, and these tax incentives and rebates allow those who may not otherwise be able to afford an EV (new or used) to purchase one. The amounts allotted for this range from \$500-\$4000, usually depending on the exact car being considered.¹³²

States have implemented many other supportive policies to date. Some examples of these include, reducing vehicle registration fees for EV's, allowing EV drivers to use HOV lanes on state highways, and awarding grants or cash rebates for workplaces to install EV charging stations.¹³³ Cities have also been able to adopt their own incentives for EV drivers, such as parking benefits, publicly funded charging, residential building incentives to install EV chargers through rebates and building code amendments.¹³⁴ States can also work with electric utilities to offer

¹²⁸ Shannon Helm, *The 50 States of Electric Vehicles*, NC CLEAN ENERGY TECH. CENTER (May 4, 2022), <https://nccleantech.ncsu.edu/2022/05/04/the-50-states-of-electric-vehicles-federal-infrastructure-funding-and-managed-charging-programs-in-focus-during-q1-2022/>.

¹²⁹ *Id.*

¹³⁰ *Id.*

¹³¹ *Id.*

¹³² *Incentives to Drive Green*, N.J. DEPT. OF ENV'T. PROT., <https://dep.nj.gov/drivegreen/affordability-incentives/> (last visited Nov. 20, 2022).

¹³³ Austin Igleheart, *State Policies Promoting Hybrid and Electric Vehicles*, NAT'L CONF. OF STATE LEGIS. (Aug. 23, 2023), <https://www.ncsl.org/energy/state-policies-promoting-hybrid-and-electric-vehicles>.

¹³⁴ *Electric Vehicle Local Incentives and Funding Mechanisms*, THE CNTY. OF SANTA CLARA (Mar. 9, 2018), <https://dtnz.sccgov.org/sites/g/files/exjcpb481/files/Task-3C-Electric-Vehicle-Local-Incentives-and-Funding-Mechanisms.pdf>.

incentives, rebates, and grants for transportation electrification. One of the most common incentives is price reduction for charging EVs during off-peak hours by allowing “time of use” rates or other rate incentives to customers with EVs that provide lower electricity costs for charging the vehicle during times when electricity demand is low.¹³⁵

In conclusion, states have taken many steps towards bettering our communities for electric vehicles. Examining these actions that states have taken, such as tax incentives, rebates, and state utility commission incentives, will help us determine what actions must continue to grow moving forward, and what additional new steps should be taken.

IV. Proposal

As outlined above, the targeted stimulus measures planned by the federal and state governments have provided some impetus to the EV market. However, their plans have not completely solved the problems that concern many potential EV drivers, nor have they made clear exactly how the necessary infrastructure will be created and put into place, and how exactly it will be supported over time.

To successfully meet our country’s electric vehicle goals, the U.S. must address the current obstacles which the EV industry faces, greatly hindering advancement toward a successful EV rollout. Through the NEVI Program funds, the federal government has estimated that it will cover the vast majority of project costs, approximately 80%, and it will be left to the states to decide how to fund the approximately 20% of costs remaining.¹³⁶ However, some estimates predict that to build this infrastructure effectively, it could cost \$40 billion- eight times the amount which the

¹³⁵ *Vehicle Charging Time of Use Rate*, BGE, <https://www.bge.com/SmartEnergy/InnovationTechnology/Pages/EVTOURate.aspx> (last visited Jan. 4, 2023).

¹³⁶ *National Electric Vehicle Infrastructure Formula Program*, U.S. DEP’T. OF TRANSP. (Nov. 15, 2021), https://www.fhwa.dot.gov/bipartisan-infrastructure-law/nevi_formula_program.cfm.

federal government is providing.¹³⁷ If this estimate is even close to accurate, additional funding must be sought.

The best route forward is to leverage public-private partnership structures (“P3s”) to supplement the available federal funding, cover unanticipated project costs, and further incentivize private sector investment in infrastructure. A P3 is a long-term contract between at least one public entity and at least one private party, where the private sector is providing the money upfront for the public sector’s project, and, in return, receives a percentage of the revenue the project earns for a lengthy period of time following the completion of the project.¹³⁸ Put simply, in a P3 model, the public gets its infrastructure, and the private party pays for it and makes money over time. This enables quicker and more efficient development, because it mandates collaboration amongst parties and the delegation of critical tasks to those best suited to their skills.¹³⁹

Since EV infrastructure poses a classic “chicken and the egg” situation, where companies don’t want to put chargers in until there are more EV’s on the road, and people don’t want to buy EV’s until there are more chargers available, the creation of partnerships between local government, utilities, and private companies is essential to ending this standstill by incentivizing them to work together. Collaboration through a P3 is the best means to make this technology accessible to everyone. Private third parties are able to both fund the remaining project costs and actually build out the infrastructure, assisting with financial, technical, and operational aspects of the project thanks to their experience with innovative technology.¹⁴⁰ However, they will benefit from a partnership with local government and utility companies who can best determine where to

¹³⁷ *Id.*

¹³⁸ *Public-Private Partnerships*, U.S. DEP’T. OF TRANSP. (July 27, 2021), <https://www.transportation.gov/buildamerica/p3>.

¹³⁹ *Id.*

¹⁴⁰ Michael Grothaus, *Why Exactly Does the Government Suck So Badly At Software?*, FAST COMPANY (May 27, 2014), <https://www.fastcompany.com/3031108/why-exactly-does-the-government-suck-so-badly-at-software>.

place the charging stations, ease permitting restrictions, and address power grid restraints. Forming P3s and thereby expanding these private sector companies, will increase responsiveness to U.S. market demand, create a more efficient localized supply chain, and reduce delivery lead times of crucial elements of the project.

A. Overview of Public-Private Partnerships (“P3s”)

Jurisdictions and agencies define P3s differently depending on their local rules. This article references them broadly and adopts the Federal Highway Administration’s definition of P3s as “long term contractual agreements between a public agency and a private entity to design, build, finance, operate, and maintain an infrastructure project.”¹⁴¹ Often, these agreements last for more than a decade, typically between 25-40 years.¹⁴² P3s require extensive long-term planning and a willingness to shift some control and ownership to private parties.¹⁴³ Understandably, the federal government is reluctant to do this, but state and local governments are excellent candidates for such partnerships and more likely to see P3s as a creative opportunity. A 2016 Syracuse University study found that P3 projects “are largely completed on schedule and on budget when compared to traditional DBB [design-bid-build] projects” where public entities manage project delivery.¹⁴⁴ Here, the EV goals of the U.S. have ambitious deadlines that P3s have the power to manage effectively.

The massive scale of the charging infrastructure required to meet future EV demand will need to be designed for a diverse set of customers, from personal and commercial vehicles to

¹⁴¹ Gail Lewis, *Leveraging Innovation in Infrastructure P3s*, HDR, INC., <https://www.hdrinc.com/insights/experts-talk-leveraging-innovation-infrastructure-p3s-gail-lewis> (last visited Jan. 10, 2023).

¹⁴² Andrew McIntyre, *Private Sector Could Help Fund \$2T Infrastructure Bill*, LAW 360 (May 7, 2021), <https://plus.lexis.com/api/permalink/1b99dd0d-6b5e-4922-8ff4-dd09dea55364/?context=1530671>.

¹⁴³ *Id.*

¹⁴⁴ *Public-Private Partnerships: Benefits and Opportunities for Implementation Within the United States*, SYRACUSE UNIV. at 21, <https://aiia-infra.info/wp-content/uploads/Syracuse-Univ-P3-Research-Report-FINAL.pdf> (last visited Jan. 10, 2023).

public transit, school buses and government fleets. Such a large project is a great candidate for P3s, as the P3 structure is traditionally best for development projects where the public sector owns the infrastructure and determines when and where to build the project, its scope, and its budget and the private sector designs, builds, finances, maintains and operates the public infrastructure.¹⁴⁵ To encourage EV adoption and self-sufficient charging stations, the public sector needs to work with private partners who understand the EV customer and the best possible charging experience to future-proof EV charging infrastructure. Private partners with commercial interests in forming a P3 could include real estate owners, vehicle manufacturers, retailers, insurance and financial companies, charge point operators, local businesses, and utility companies.

B. Success in Europe and Canada

The application of P3s for EV infrastructure development is not a brand-new idea. P3s are common and heavily relied upon in Europe and Canada, and as a direct result, they have a more advanced and efficient EV infrastructure than that in the U.S.¹⁴⁶ The number of connected EV charging points in Europe and North America reached a total estimate of 3.3 million units in 2021.¹⁴⁷ Europe represents the largest share comprising around 2.6 million of these charging points, leaving North America with a mere 0.7 million of the total number of charging points.¹⁴⁸ Relatedly, the U.S. only uses P3's for roughly 1.5% of infrastructure projects while the U.K. and Canada use them for 15-20%.¹⁴⁹

¹⁴⁵ *Id.*

¹⁴⁶ IEA, *Global EV Outlook 2022*, IEA (May 2022), <https://www.iea.org/reports/global-ev-outlook-2022>.

¹⁴⁷ *Europe and North America EV Charging Infrastructure Market Report 2023*, BUS. WIRE (Jan. 27, 2023), <https://www.businesswire.com/news/home/20230127005196/en/Europe-and-North-America-EV-Charging-Infrastructure-Market-Report-2023-Number-of-Connected-EV-Charging-Points-in-Europe-and-North-America-to-Reach-18-Million-by-2026---ResearchAndMarkets.com>.

¹⁴⁸ *Id.*

¹⁴⁹ Seth Gabriel & Umer Yaqub, *P3s Can Unlock More Federal Funds for Infrastructure*, BDO ALL, USA (Oct. 7, 2022), [https://www.bdo.com/insights/advisory/public-private-partnerships-\(p3s\)-can-unlock-more-federal-funds-for-infrastructure](https://www.bdo.com/insights/advisory/public-private-partnerships-(p3s)-can-unlock-more-federal-funds-for-infrastructure).

P3s are sometimes viewed negatively, equating them with privatization and capitalism at the public's expense.¹⁵⁰ Yet, despite these concerns, Europe and Canada rely on P3s for many of their development projects¹⁵¹ and, given this reliance on P3s, seem to have found that the positives far outweigh the negatives. According to the Canadian Council for Public and Private Partnerships (CCPPP), P3s are better than alternative financing options due to the advantages of having a single contract with the scope determined at the outset, allowing confidence of budget, schedule, and size of the project, and often the managing company is not paid until the project is delivered as per the contract specifications.¹⁵² Additionally, this approach offers better security to the public partner because of the risks that are transferred to the private sector.

Furthermore, as more projects designed via P3 have been successful, P3s have gained more momentum and support from the public.¹⁵³ Canada even has a federal office (the CCPPP) and many provincial offices specifically devoted to P3s, including a "fairness advisor" hired by governments ensuring transparency and encouraging a supportive public legal and regulatory environment.¹⁵⁴ The Canadian P3 process is so efficient that their projects tend to be completed early, and generally take a year less than similar projects in Europe.¹⁵⁵

Yet, it is Europe's Nordic countries- Denmark, Finland, Iceland, Norway, and Sweden - that have truly dominated EV growth.¹⁵⁶ In 2021, EVs accounted for more than half of all cars sold

¹⁵⁰ See generally David Hall, *Why Public-Private Partnerships Don't Work*, PUB. SERV. INT'L RSCH. UNIT (Jan. 2014), https://www.world-psi.org/sites/default/files/rapport_eng_56pages_a4_lr.pdf.

¹⁵¹ Paul Giovannoni & Paul Trombitas, *Leveraging Canada's Active P3 Market*, FMI CORP. (Jun. 2018), <https://fmicorp.com/insights/quarterly-articles/leveraging-canadas-active-p3-market>.

¹⁵² *How Public-Private Partnerships Can Boost Innovation in Health Care*, KNOWLEDGE AT WHARTON (Oct. 26, 2017), <https://knowledge.wharton.upenn.edu/article/public-private-partnership-enabled-innovation-health-care>.

¹⁵³ Giovannoni & Trombitas, *supra* note 151.

¹⁵⁴ *Why P3s?*, CCPPP (Jun. 6, 2016), <https://www.pppcouncil.ca/why-p3s>.

¹⁵⁵ *Id.*

¹⁵⁶ Gavin Maguire, *Europe Eats Into China's Lead As Top EV Growth Market*, REUTERS (Oct. 5, 2022, 2:24 PM), <https://www.reuters.com/markets/commodities/europe-eats-into-chinas-lead-top-ev-growth-market-2022-10-05>.

in these countries, which is the goal the U.S. is not set to reach until 2030.¹⁵⁷ Of course, the Nordic countries successes can be attributed to other factors aside from P3s, including having high income levels, a generally climate-conscious population, and strong governmental support and incentives.¹⁵⁸ However, their reliance on P3s is what allowed them to quickly build an extensive network of EV charging infrastructure so quickly.¹⁵⁹ For example, in Norway, they created a state owned enterprise called ENOVA whose purpose is to promote a shift towards environmentally friendly practices, including strong policy significantly reducing the cost of EVs and support for the deployment of charging infrastructure.¹⁶⁰ ENOVA set up a partnership with a private company called Norwegian EV Association who created NOBIL, an online database of EV charging stations.¹⁶¹ The EV Association is responsible for the ongoing management of NOBIL. Meanwhile, municipal councils manage local incentives such as parking fee exemptions.¹⁶² These countries have propelled Europe to the forefront of EV development. From 2016 to 2021, the number of public EV charging stations in Europe increased by 431% to a total of more than 356,000 stations, according to the IEA.¹⁶³ Currently, Europe is responsible for more than a quarter of the world's EV production, and EVs represented roughly 20 percent of its new-car sales in 2021.¹⁶⁴

¹⁵⁷ *Id.*

¹⁵⁸ *Id.*

¹⁵⁹ *State of the Industry*, CHARGE UP EUR. (Apr. 22, 2022), https://static1.squarespace.com/static/5e4f9d80c0af800afd6a8048/t/626182c7e90e1d1701a7e65b/1650557649212/CargeUpEurope_StateoftheIndustry_2022.

¹⁶⁰ *The Rise of Electric Vehicles in Norway*, CENTRE FOR PUBLIC IMPACT (Apr. 8, 2016), <https://www.centreforpublicimpact.org/case-study/electric-cars-norway>.

¹⁶¹ *Id.*

¹⁶² *Id.*

¹⁶³ Maguire, *supra* note 156.

¹⁶⁴ Julian Conzade, Florian Nägele, Swarna Ramanathan, & Patrick Schaufuss, *Europe's EV Opportunity and the Charging Infrastructure Needed to Meet It*, MCKINSEY & CO. (Nov. 4, 2022), <https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/europes-ev-opportunity-and-the-charging-infrastructure-needed-to-meet-it>.

Many states and localities in the U.S. should look towards how European countries and Canadian provinces utilize P3s as they make decisions about the allocation of their NEVI program funds. These public-private partnerships are largely completed on time and within budget as compared to where public entities manage project delivery.¹⁶⁵ The U.S. has seen P3s operating successfully on a small scale.¹⁶⁶ Some recognizable examples of recent P3s include New York City's Hudson Yards and the renovation of St. Louis's Gateway Arch.¹⁶⁷ A public-private partnership will also be used to redevelop New York's LaGuardia Airport Terminal B.¹⁶⁸ In Denver, the popular car rental company Hertz recently announced a P3 with the city and committed to bringing 5,000 electric vehicles to their fleet of rentals in Denver.¹⁶⁹ In addition, Hertz' partner BP Pulse will install public DC fast chargers around the city, including at the Denver airport and in underserved neighborhoods.¹⁷⁰ The partnership brings goodwill to both companies and will help customers who have never driven an EV before overcoming any intimidation they may feel towards getting behind the wheel. After trying one out in a rental capacity, the driver may be more likely to buy one for themselves in the future.

In conclusion, there is much to learn from Europe and Canada's successful P3 projects, from the process of creating a contract appealing to all parties up to the completion of the project. Looking towards these successes should provide reassurance to those in the U.S. who are skeptical of entering into such a contract.

¹⁶⁵ See *Public-Private Partnerships: Benefits and Opportunities for Implementation Within the United States*, SYRACUSE UNIV. 21, <https://aiia-infra.info/wp-content/uploads/Syracuse-Univ-P3-Research-Report-FINAL.pdf> (last visited Jan 10, 2023).

¹⁶⁶ See *How P3s Will Help Deliver Projects Under the U.S. Infrastructure Package*, JLL (Nov. 11, 2022), <https://www.us.jll.com/en/trends-and-insights/cities/how-p3s-will-aid-in-delivering-projects-under-the-1-1-trillion-us-infrastructure-package>.

¹⁶⁷ *Id.*

¹⁶⁸ *Id.*

¹⁶⁹ Press Release, "Hertz Electrifies" Launches in Denver, HERTZ (Jan. 19, 2023) (on file with Press Release Newswire).

¹⁷⁰ *Id.*

C. Incentives for the Private Sector

In assessing P3s, it also is necessary to analyze why a private company would opt to be responsible for paying for these projects, especially when considering the requisite scale. The answer lies in the dedicated long-term revenue stream. Private sector entities are often willing to subsidize projects and provide vital infrastructure in exchange for a minimum-term operating agreement.¹⁷¹ The parties would negotiate a form of revenue sharing from the charging stations, where the private entity gets its infrastructure costs repaid over time, plus overhead and profit for the installation, operations, and maintenance, with the state getting a smaller percentage return over and above the former.¹⁷² The incentives for these public-private contracts for the private party include reputational benefits and meeting their environmental, social, and governance goals, plus the income sharing resulting from the project.¹⁷³ EV charging provides business opportunities affording both cash flow to support the capital investment and a meaningful margin to the benefit of business partners.

Charge point operators are likely the natural lead partner for states in implementing EV charging infrastructure. States should begin engaging with them as early as possible to develop a better understanding of commercial models and to educate these potential partners about the public goals they are trying to achieve. EV charging offers attractive returns on invested capital and payback.

¹⁷¹ David Schmid & Luis Garcia, *The Role of EV Infrastructure in Municipal Mobility Planning*, AM. CITY & COUNTY (Sep. 16, 2022), <https://www.americancityandcounty.com/2022/09/16/the-role-of-ev-infrastructure-in-municipal-mobility-planning>.

¹⁷² *Id.*

¹⁷³ *See Id.*

D. Public-Private Partnerships Can Overcome EV Infrastructure Challenges

Many of the limitations in the current plans of the federal and state governments have been pointed out in Section II. They concern the reliability of charging stations once they are put in place, prohibitive costs of purchasing a home charger or even electric vehicles, zoning and permitting problems encountered when installing the chargers, interoperability between different makes of EVs and chargers, the capacity of state power grids, and supply chain problems. Our best route to solving these problems is by developing P3s.

Beneficially, the existing infrastructure in Europe has given us a good estimate of what the U.S.' power needs will be by 2035.¹⁷⁴ Working with that data, the ability to charge any form of EV quickly, easily, and reliably – and in urban, rural and radically different landscapes – hinges on CPOs ability to install the critical infrastructure required and for grid operators being able to provide the tens of thousands of standardized, reliable connections across state lines and North America. For that task to be a success, these private companies must partner with the public sector to pinpoint and solve these obstacles.

1. Reliability

One major obstacle is that of reliability. Without confidence that drivers can refuel their electric cars as reliably as their gas-powered vehicles, they will be reluctant to embrace change. For this reason, NEVI funding requires that CPO's maintain at least 97% system reliability.¹⁷⁵ To thwart system downtime, efficiency in maintenance operations, software, digital connectivity and cybersecurity will be required. Typical EV charging stations require regular maintenance, and it is

¹⁷⁴ CHARGEUP EUR., *supra* note 159.

¹⁷⁵ Mark Coltelli & Tom Rousakis, *How NEVI Funding Can Transform EV Charging Stations and EV Adoption*, EY (Oct. 19, 2022), https://www.ey.com/en_us/government-public-sector/strategy-consulting/nevi-funding-can-transform-ev-infrastructure.

estimated that they will likely require full replacement every decade.¹⁷⁶ A successful P3 will be able to allocate responsibilities amongst the parties to play to each of their strengths. For example, the local government may dictate where the charging stations are needed and to help expedite the appropriate permitting, the CPO can install, design, and maintain the actual charging station, software, and app, and the utility company can address grid-level constraints. Moreover, the private sector has more efficient and customer-friendly technology than governmental agencies.¹⁷⁷ To make these charging stations as reliable as they need to be, the parties must work collaboratively and divide those tasks amongst themselves into manageable components that can realistically be sustained over an extended period of time.

2. Inhibitive Costs Associated with EVs

Another problem arises out of the fact that installing DC fast chargers to meet the NEVI guidelines is exponentially more expensive than installing level 2 chargers, which are most prevalent at the moment.¹⁷⁸ A local government will not have the funds to invest in much needed DC fast chargers and must rely on these private partners for funding. This is yet another reason why a long-term P3 contract can be so successful. The private partner puts down the money up front, but they have near certain future earnings over the length of the contract.

3. Zoning and Permitting

Furthermore, local governments can help the private operators by streamlining permitting processes, creating policy to incentivize EV's and making sure the stations are being placed in the best spot. The fast chargers should be in the most convenient location while still satisfying the BIL guidelines and they should be in close proximity to cell phone towers to ease app-based navigation

¹⁷⁶ *Id.*

¹⁷⁷ See Michael Grothaus, *supra* note 140.

¹⁷⁸ Bellon, *supra* note 37.

and payment. Ensuring these stations are easy-to find, well-maintained, safe, have different options for payment, and have the common amenities ubiquitous of a well-run gas station will further encourage drivers to frequent them.

4. Interoperability

Independent charging providers like Electrify America, EVgo, ChargePoint, and Tesla will need to contract with state governments to realize their plans for highway charging networks. Tesla has stated that they will imminently be opening their charging network to other car manufacturers, which will help considerably with access to fast charging.¹⁷⁹ Tesla having a closed-network software has been a huge barrier to creating a reliable nationwide EV charging network.¹⁸⁰ An open network, like EV Connect, is designed to work with multiple types and makers of charging stations, putting your EV charging infrastructure at a distinct advantage from the start.¹⁸¹ To ensure interoperability of charging stations, CPOs must use an open software model and plug adapters should be made available at the stations, until the day that all EV manufacturers utilize the same plug.

The private sector is better equipped to develop this successful open network software than the public sector for many reasons. Standouts in the tech industry are more attracted to working for a startup or another private company than they are in coding for the government, and it shows. Anyone who pays their taxes on the IRS' website, uses Healthcare.gov, or renews their license on

¹⁷⁹ Hyunjoo Jin & Jarrett Renshaw, *Tesla to Open U.S. Charging Network to Rivals in \$7.5 Bln Federal Program*, REUTERS (Feb. 15, 2023, 7:22 PM), [https://www.reuters.com/technology/tesla-open-us-charging-network-rivals-75-bln-federal-program-white-house-2023-02-15/#:~:text=Tesla%20to%20open%20U.S.%20charging%20network%20to%20rivals%20in%20%247.5%20bln%20federal%20program,-By%20Hyunjoo%20Jin&text=SAN%20FRANCISCO%2C%20Feb%2015%20\(Reuters,EVs%20and%20cut%20carbon%20emissions.](https://www.reuters.com/technology/tesla-open-us-charging-network-rivals-75-bln-federal-program-white-house-2023-02-15/#:~:text=Tesla%20to%20open%20U.S.%20charging%20network%20to%20rivals%20in%20%247.5%20bln%20federal%20program,-By%20Hyunjoo%20Jin&text=SAN%20FRANCISCO%2C%20Feb%2015%20(Reuters,EVs%20and%20cut%20carbon%20emissions.)

¹⁸⁰ *See Id.*

¹⁸¹ *Charging Station Reliability Is Crucial As EVs Gain Speed*, EV CONNECT (Jan 25, 2021), <https://www.evconnect.com/blog/charging-station-reliability-is-crucial>.

a state DMV website, knows how outdated governmental software and technology is. In contrast, websites and apps designed by private companies tend to be much more user friendly. In addition to having more talented software developers on staff, the government doesn't take the same approach to technology development that the private sector does and have proven themselves to be bad at rolling out big digital services and maintaining a user-friendly interface, no matter how much money they have at their fingertips. Meanwhile, even small private companies can achieve wildly successful software launches. A private company uses their talents to build a "Minimally Viable Product" where it brings the solution to market as soon as possible in a basic form, and then continuously builds onto it and improve it via updates as they gather user feedback.¹⁸²

Finally, the public sector faces many more regulatory policies in place which make it near impossible for the government to function in the same way. For example, The Paperwork Reduction Act, "makes it nearly impossible for developers in the government to ask questions of the public in a timely manner, so user-validated development is very challenging."¹⁸³ Additionally, there exist policies dictating which areas of technology the government may develop in and how they must be implemented, which makes the use of emerging technology nearly impossible.¹⁸⁴ Due to the seriousness of governmental software being hacked, the Government is risk-averse by nature and cannot achieve the results that a private company could in developing an open network charging software.

5. Power Grid Constraints

¹⁸² Grothaus, *supra* note 140.

¹⁸³ *Id.*

¹⁸⁴ *Id.*

Utility companies will also need to play a role in the P3s to solve the problem of our nations insufficient grid capacity. Because selling electricity is what their entire business is based on, it is highly likely that utility companies are excited for this zero-emissions transition and will be eager to join P3s. Even so, having this additional revenue from the P3 will only further incentivize them to make necessary updates to the power grid. A repercussion of these costly grid updates to consider is the fact that electricity prices will undoubtedly rise. However, these price hikes will be temporary and can be reconciled by the fact that the higher price for electricity is still offset by the hundreds of dollars of savings in no longer having to buy gasoline.

It is worth noting that there is not as much urgency in updating our grid as some of the other problems. The experts all agree that this transition will be gradual, allowing utility and regulatory planners ample time to adapt.¹⁸⁵ They predict “ample time” to mean at least eight years, but probably more.¹⁸⁶ Another role that utilities, grid operators, and third parties can work towards is creating programs and markets to provide incentives for drivers to contribute power exports to the grid.¹⁸⁷ The electric car sitting parked in a driveway, or the school bus stored at the bus depot could, if set up to do so, send the electricity stored in its battery back to a strained grid and help meet the needs of millions of people with fans, air conditioners, laptops, and lights that need power during the day’s peak electricity demand. Even a few kilowatts of power, if provided from a sufficient number of vehicles, would help a lot.¹⁸⁸ However, expanding our grid capacity would still be necessary due to the high risk of relying upon the kindness of the EV owner to export power.

¹⁸⁵ Scooter Doll, *The Lights Will Not Go Out*, ELECTREK (Apr. 5, 2022, 8:09 AM), <https://electrek.co/2022/04/05/the-lights-will-not-go-out-energy-experts-do-not-foresee-evs-overloading-us-electrical-grid>.

¹⁸⁶ *Id.*

¹⁸⁷ Houston, *supra* note 49.

¹⁸⁸ *Id.*

The funding provided through a P3 will also make long-term preparation possible. Rather than merely erecting infrastructure to meet the immediate needs of the U.S., P3 funding will enable developers to build charging sites which can scale economically as EV adoption increases. Although the NEVI program only requires there to be four chargers per station, P3s could have the flexibility to design high-traffic EV charging locations with room for expansion.¹⁸⁹ For example, Blink Charging is beginning to invest in areas where there is not much demand since residents there will inevitably need access to public charging in the future.¹⁹⁰ The CEO of Blink Charging calls such neighborhoods “a homerun.”¹⁹¹ They start small in those areas by only installing two or so chargers, but they will run power for ten chargers, so a city doesn’t later have to dig up concrete and run conduit again to build more chargers.¹⁹² An expansion strategy can reduce future costs tied to real estate needs and utility upgrades and aid in the future problem of needing more chargers.

6. Supply Chain

Difficult issues regarding the U.S. supply chain issues could be addressed via a successful P3 because this problem stems from weak investment in advanced technologies, limited access to critical minerals, and lack of incentives promoting innovation in battery manufacturing. By having the private sector invest in U.S. battery production and creating an adequate supply chain for lithium-ion batteries, the U.S. could begin catching up with other countries.

P3s are the best means forward because they incentivize investments from the private sector to build the actual charging stations and develop better technology than the government is

¹⁸⁹ Danielle McLean, *Building EV Charging Through Public-Private Partnerships*, SMART CITIES DIVE (Oct. 4, 2022), <https://www.smartcitiesdive.com/news/urban-ev-charging-public-private-partnerships/633251>.

¹⁹⁰ *Id.*

¹⁹¹ *Id.*

¹⁹² *Id.*

capable of. A public-private partnership where the state does not own the charging station is ideal because the private company would own, operate, and maintain this system. For local officials who are uncertain about whether to invest in charging infrastructure, letting a private company come in and take ownership of the effort can help the city or town get started in that area with minimal risk on their end.

V. Conclusion

In conclusion, P3s make sense because the private sector has the funds and incentives to install and maintain the infrastructure, but it won't be effective unless they collaborate with the local government to determine where best to install the chargers and with utility companies to ensure the electric grid has the capacity to support the infrastructure. P3s perfectly incentivize collaboration amongst all these useful parties and are the fastest route to overcoming the obstacles outlined above and getting the U.S. infrastructure projects realized. As we saw with pandemic-inspired bailout grants for struggling businesses and households, the government assistance programs were robust but eventually ran out of money. Taking stock of those lessons learned, it is incumbent upon municipalities to act quickly in the aftermath of the BIL—in collaboration with varying levels of the public and private sectors through public-private partnerships.