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Public Policy by Settlement of Litigation: A Case Study

Abstract: In 2002, the California Public Utilities Commission alleged that a group of energy sellers had overcharged California ratepayers by approximately \$14 billion. The case went to trial and was dismissed, appealed, and ultimately remanded to the Federal Energy Regulatory Commission. It remained there until March 2012, when the CPUC and the Dynegy parties, a subset of the original group of defendants, announced that a settlement agreement had been reached wherein the California ratepayer claims (alleged to be almost \$1 billion) would be dismissed. In return, NRG, successor to the Dynegy parties, would: 1) pay the CPUC \$20 million and 2) invest \$102.5 million in California to expand its electric vehicle charging infrastructure. We view NRG's required investment as a subsidy equal to the expected value of the CPUC's claims against the Dynegy parties. The agreement and the legal process by which it was arrived at have important legal, economic, and public policy implications.

Keywords: CPUC; electric charging stations; electric vehicles; EVCS; public utilities commission; utilities regulation

^aDr. Wazzan was economic expert for ECOTality in *ECOTality, Inc., v. California Public Utilities Commission et al.*, Court of Appeal of the State of California, First Appellate District, Division Two. Christopher Pham provided valuable research assistance. The views expressed in this paper are those of the authors and are not necessarily reflective of the views of others at Berkeley Research Group or ECOTality. Any errors or omissions are the responsibility of the authors.

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1 Introduction

In the wake of the flawed energy deregulation the California Legislature (AB 1890) instituted in 1996, the state faced an energy crisis in 2000–2001 that included

rolling blackouts and the ultimate bankruptcy of Pacific Gas and Electric.¹ In an effort to adequately meet electricity demands, California contracted with various wholesale energy sellers. In 2002, the California Public Utilities Commission (“CPUC”) and the California Electricity Oversight Board filed two separate, almost identical, complaints against more than 20 energy sellers under long-term contracts with the California Department of Water Resources alleging that the prices, terms, and conditions of such contracts were unjust and unreasonable and, to the extent applicable, not in the public interest. The complaints also alleged that the group obtained the prices, terms, and conditions in the contracts through the exercise of market power, in violation of the Federal Power Act, and their actions were causing injury to the citizens and ratepayers of California on whose behalf the CPUC is statutorily entitled to act.² According to the CPUC, California ratepayers had been overcharged by approximately \$14 billion.³

The consolidated case went to trial and was dismissed, appealed, and ultimately remanded to the Federal Energy Regulatory Commission (“FERC”). It remained there until March 2012, when the “Dynergy parties,”⁴ a subset of the original group of defendants, and the CPUC announced that a settlement agreement (“the Agreement”) had been reached wherein the California ratepayer claims against the Dynergy parties would be dismissed.⁵ In return, NRG Energy, Inc. (“NRG”), successor to the Dynergy parties, would 1) pay the CPUC \$20 million and 2) invest \$102.5 million to implement the Electric Vehicle Charging Station Project (“EVCSP”) as follows:^{6,7}

1 The authors are not opposed to deregulation as a matter of principle. The partial deregulation of California’s energy markets led to weaknesses in the system that energy traders and other market participants exploited to manipulate the price and supply of electricity. For an account, see, e.g., James L. Sweeney, 2002, “The California Electricity Crisis,” Harvard Institution Press Publication.
2 On April 25, 2002, the Federal Energy Regulatory Commission issued an order consolidating the proceedings.

3 *Public Utilities Commission of the State of California v. Sellers of Long-Term Contracts to the California Department of Water Resources* Section 206 Complaint, filed on February 25, 2002 (“Complaint”), p. 4.

4 The “Dynergy parties” included Dynergy Power Marketing, Inc.; Cabrillo Power I, LLC; El Segundo Power, LLC; and Long Beach Generation, LLC. On March 31, 2006, NRG Energy, Inc. completed purchase and sale agreements for projects co-owned with Dynergy, Inc, thereby acquiring Dynergy’s 50% ownership interest in West Coast Power Holdings Inc., which, in turn, owned 100% of the membership interests of Cabrillo Power, El Segundo Power, and Long Beach Generation. As a result of certain contractual commitments, NRG and its affiliates became responsible for performing the Dynergy parties’ obligations under the Agreement.

5 For a summary of the proceedings, see, e.g., November 5, 2012 Order, 141 FERC ¶ 61,092 at pp. 2–3.

6 Agreement, §§3(a)(i) and 3(a)(ii).

7 The Agreement was formalized in the “Long-Term Contract Settlement and Release of Claims Agreement” (April 27, 2012) between the CPUC, the Dynergy parties, and NRG.

- \$50.5 million for the installation of a minimum of 200 public electric vehicle charging stations (“Freedom Stations”).⁸ Freedom Stations must have at least one DC Fast Charger and one Level 2 charger.⁹ These stations are collectively referred to as the “Public Charging Ecosystem.”¹⁰
- \$40 million for the installation of a minimum of 10,000 Make-Ready Stubs and 1000 Make-Readies Arrays.¹¹ A Make Ready Stub includes the mounting fixture and electrical infrastructure for electric vehicle chargers, but not the actual chargers.¹² A Make-Readies Array is a group of connected Make-Ready Stubs.¹³ Make Ready Stubs and Make Readies Arrays are not intended to accommodate DC Fast Chargers. They are also intended for the provision of dedicated charging services to a subscriber base, not the general public.¹⁴
- \$5 million for the “deployment, demonstration and testing of electric vehicle charging technologies in the State of California.”¹⁵
- \$4 million for “projects that enhance appreciation of the social benefits of electric vehicles and create opportunities for residents of under-served communities to benefit from expanded use of electric vehicles in California.”¹⁶
- \$3 million for the “fixed operating costs” of the Freedom Stations, including electricity demand charges, meter charges, security and communication charges, periodic site visits, and maintenance.¹⁷

The CPUC had sought a refund of \$940 million dollars from the Dynegy parties.¹⁸ Thus, in economic terms, NRG’s investment is subsidized, in whole or in part, by the expected value of the CPUC’s claims against the Dynegy parties. The Agreement and the legal process by which this Agreement was arrived at have important legal, economic, and public policy implications for California.

The powers of the CPUC are defined by the State Constitution and subsequent delegation of responsibilities by the State Legislature.¹⁹ In the exercise of

8 Agreement, §§4(a)(i) and 4(a)(ii).

9 At its discretion, NRG is allowed to install two DC Fast Chargers in lieu of one DC Fast Charger and one Level 2 Charger. Agreement, §4(a)(vi)(1).

10 Agreement, §4(a)(ii).

11 Agreement, §§4(c)(i) and 4(c)(ii)(1).

12 Agreement, §1(ppp).

13 Agreement, §1(III).

14 Agreement, §4(c)(i).

15 Agreement, §4(d)(i)(1).

16 Agreement, §4(d)(ii)(1).

17 Agreement, §4(b)(i).

18 See, e.g., NRG Energy, Inc. 2011 Form 10-K, p. 50.

19 In 1911, the CPUC was established by Constitutional Amendment as the Railroad Commission. In 1912, the Legislature passed the Public Utilities Act, expanding the commission’s regu-

its powers, certain rules generally apply and typically include: 1) an obligation to follow a certain set of procedures in making a decision; 2) to do so in a transparent manner that allows public review and comment on the commission's proceedings; and 3) to make public the agency's rationale for reaching the particular decision. The more consequential the commission's action, the stricter these rules tend to be enforced.²⁰ Parties adversely impacted by the commission's decisions usually have full access to California's court system to seek redress.²¹

The March 2012 Agreement was not consistent with these rules, and when presented as a *fait accompli* came as a complete surprise to interested stakeholders and the public. The Agreement had been negotiated in secret, without the typical public process that normally accompanies CPUC action. At the time, the President of the CPUC praised the Agreement as essential to jump-start the electric vehicle ("EV") market in California:

*The settlement will launch a virtuous circle in which ever more Californians will feel comfortable driving EVs, and growing EV sales will in turn attract ever more investment in charging infrastructure to our State. It will create jobs in California, help clean our air, and support attainment of our greenhouse gas reduction goals.*²²

In the same press release, the Chair of the Air Resources Board also lauded the Agreement:

*California has the most aggressive clean transportation goals in the nation. The automakers are already building clean electric cars. This infrastructure infusion will give consumers the confidence to go out and buy them, which is what needs to happen for us to clean our air, lower greenhouse gas emissions and reduce our dependence on imported oil.*²³

latory authority to include natural gas, electricity, telephone, and water companies as well as railroads and marine transportation companies. In 1946, the Railroad Commission was renamed the California Public Utilities Commission. See also, California Constitution, Article 12.

20 Hearings are overseen by either an "administrative law judge" who make and execute the decisions. See CPUC Code §1701.2(a) and <http://www.cpuc.ca.gov/PUC/aboutus/Divisions/ALJ+Division/index.htm>.

21 CPUC Code §1756 (a) states in part:

Within 30 days after the commission issues its decision denying the application for a rehearing, or, if the application was granted, then within 30 days after the commission issues its decision on rehearing, or at least 120 days after the application is granted if no decision on rehearing has been issued, any aggrieved party may petition for a writ of review in the court of appeal or the Supreme Court for the purpose of having the lawfulness of the original order or decision or of the order or decision on rehearing inquired into and determined.

22 Office of Governor Edmund G. Brown Jr., 2012, "Governor Brown Announces \$120 Million Settlement to Fund Electric Car Charging Stations Across California," March 23. Accessed at: <http://gov.ca.gov/news.php?id=17463>.

23 *Ibid.*

Setting aside the failure of the CPUC to obtain stakeholder input, we do not take further issue with the secrecy with which the Agreement was reached. The relevant questions are whether the Agreement was 1) lawful and 2) economically pro-competitive. One of NRG's competitors, ECotality, Inc., did not think so, and, in May 2012, filed a legal challenge to the Agreement.²⁴ NRG countered that the CPUC had the power to settle the claims at issue so long as the settlement did not violate state law.

Section 2 summarizes the legal issues surrounding the Agreement. Section 3 explores the potential competitive impact of the Agreement, and Section 4 concludes the paper.

2 A Review of the Legal Issues Raised by the Settlement Agreement

The Agreement as finally disclosed to the public raised several important legal questions:

- Does the CPUC have the authority to enter into agreements that impact non-regulated industries?
- Can the CPUC dispose or make use of public assets (i.e., ratepayer claims) when entering into such agreements?
- If the CPUC in fact has such power, does it have any limit? In particular, may it be exercised through the secretive process of settlement negotiations, without any public input or a record of decision-making on critical issues, including compliance with California's public policy of encouraging free and open competition, capable of being judicially reviewed?²⁵

2.1 Does the CPUC have the Authority to Enter into Agreements that Impact Non-regulated Industries?

Prior to authorizing the Agreement, the CPUC itself had determined that the electric vehicle charging station ("EVCS") industry was not a "public utility" and therefore was beyond the Commission's regulatory jurisdiction:

²⁴ ECotality Press Release, 2012, "ECotality Files Lawsuit to Halt Illegal California PUC Agreement," May 25.

²⁵ See, e.g., State of California, Office of Attorney General, 2013, "Antitrust and Business Competition." Accessed at: <http://oag.ca.gov/antitrust>.

*Thus, an entity owning, controlling, operating, or managing electric vehicle charging facilities is not an “electric corporation” pursuant to Pub. Util. Code § 218 and not a “public utility” pursuant to Pub. Util. Code § 216, unless the entity falls under § 216 and § 218 for other reasons. As such, the Commission would not have regulatory authority regarding the price that an electric vehicle charging facility operator charges for charging services or other aspects of operation of such facilities unless the charging facility operator is a public utility by reason of its operations other than providing electrical charging.*²⁶

The Legislature codified this determination as Public Utilities Code, Section 216 (i).²⁷ The Legislature, in determining that the EVCS industry would not be subject to CPUC regulation, placed responsibility for EVCS infrastructure planning with the California Energy Commission (“CEC”). Pursuant to this mandate, the CEC published a series of comprehensive plans for the development of EVCS infrastructure in California.²⁸

2.2 Can the CPUC Lawfully Dispose or Make Use of Public Assets (i.e., Ratepayer Claims) When Entering into Settlement Agreements?

In the litigation that the Agreement settled, the CPUC had sought a refund for California ratepayers of the excessive charges paid in 2000–2001 to the Dynegy parties, amounting to \$940 million as alleged by the CPUC. California Public Utilities Code Section 453.5 provides that where the CPUC obtains ratepayer refunds, they must be refunded ratably.²⁹ However, by settling ratepayer refund

²⁶ Public Utilities Commission Decision (D.) 10-07-044, issued August 2, 2010, in Rulemaking Docket #09-08-009. See also, Assigned Commissioner’s Scoping Memo, issued January 12, 2010, in Rulemaking Docket #09-08-009, at pp. 4–5.

²⁷ §216(i) states in part:

The ownership, control, operation, or management of a facility that supplies electricity to the public only for use to charge light duty plug-in electric vehicles does not make the corporation or person a public utility within the meaning of this section solely because of that ownership, control, operation, or management.

²⁸ See, e.g., California Energy Commission, 2012, “Bay Area Prepares for Electric Vehicles With Energy Commission Grant,” February 8; and California Energy Commission, 2012, “San Diego Region Prepares for Electric Vehicles With Energy Commission Grant,” February 8.

²⁹ §453.5 states in part:

Whenever the commission orders rate refunds to be distributed, the commission shall require public utilities to pay refunds to all current utility customers, and, when practicable, to prior customers, on an equitable pro rata basis without regard as to whether or not the customer is classifiable as a residential or commercial tenant, landlord, homeowner, business, industrial, educational, governmental, nonprofit, agricultural, or any other type of entity.

litigation without obtaining a refund, but rather a contract for “in kind” services, a question arises whether Section 453.5 of the Public Utilities Code permits this result.

Legal precedent has some bearing on this issue. In 1982, Pacific Bell had been directed by the Federal Communications Commission to refund \$79 million in principal, plus interest, to its ratepayers. Years passed without the refund actually being made to ratepayers. During this period, the interest on the original sum grew to over \$40 million. Then, in 1993, when AT&T sought permission from the CPUC to capitalize AT&T Cellular, the CPUC issued its own order specifically finding that the \$79 million “pocketed” by Pacific Bell had been intended by both itself and the FCC to be refunded to ratepayers.³⁰ However, after conducting evidentiary hearings, the CPUC decided it had the discretion to use the interest amount of \$40.3 million for other purposes, concluding that “funding telecommunications infrastructure for schools was an “appropriate use” of the interest, because schools were uniquely positioned to facilitate public access to the “information superhighway,” an action that would benefit directly all California telecommunications users.” In *Assembly of the State of California v. Public Utilities Commission* (1995), the Court agreed that “the development of an advanced telecommunications infrastructure in California” was a laudable objective, but nevertheless annulled the CPUC’s decision, finding that the proposed diversion of ratepayer funds was simply not allowed by the Section 453.5.³¹

It should be noted that the Agreement does not contain a refund per se, but rather represents the settlement of litigation that was pending before the FERC for over a decade. One must question whether the Agreement’s disposition of a ratepayer refund claim might have crossed the line delineated in *Assembly of the State of California v. Public Utilities Commission* (1995).

2.3 What is the Limit of the CPUC’s Power to Negotiate Settlements, and Must it Consider the Impact of its Actions on Economic Competition?

While the courts have recognized that the CPUC’s decisions are entitled to the respect properly due to a constitutional agency, the checks and balances on this agency are limited (with superior courts having no jurisdiction to review CPUC actions), and therefore a particular responsibility falls upon the courts

³⁰ 12 Cal.4th 91.

³¹ *Assembly of the State of California v. Public Utilities Commission* (1995) 12 Cal.4th 87.

of appeal and the California Supreme Court to ensure that the CPUC acts properly. When it has not, courts have not been hesitant to curtail the CPUC's actions.³²

For example, when the CPUC attempted to expand its authority over California's oil and gas industry, the Court struck that effort down, holding:

*Such broad regulation as that provided by the Public Utilities Act could not help but have a substantial impact on the development of any industry subject to it. To impose such regulation on the oil and gas industry as it exists today by a new construction of the act would create manifold problems. Only the Legislature can properly determine whether or not such regulation or some other form of regulation should now be imposed to promote the public interest.*³³

Another example is *California Water & Telephone Co. v. Public Utilities Commission* (1959) 51 Cal.2d 478, in which the CPUC had assumed that its authority to regulate the terms on which the petitioner water company could extend into new areas and the services it must provide in the new territory gave it the power to compel the petitioner to extend its services to a wholly new community, on terms that the utility found objectionable and had never agreed to. After a review of the limits of the CPUC's delegated authority, the California Supreme Court struck down the CPUC's actions as unlawful.³⁴ There is, however, an important distinction between this case and the present situation. In *California Water & Telephone Co.*, the CPUC attempted to modify an existing contract to which the petitioner water company was a party. In the present case, the CPUC did not interfere with an existing contract, but rather entered into a settlement agreement with a litigation adversary.

The California Supreme Court has not only stressed the importance of the CPUC adhering to its lawful authority, it has also pointed out the CPUC's obligation to consider the anticompetitive impacts of its actions so as not to compromise California's strong public policy favoring competition. In *Northern Calif. Power Agency v. PUC* (1971) 5 Cal.3d 370, the Court held that it was only *through* an adequate, reviewable consideration of competition issues that the commission could properly discharge its fundamental duty to protect the public interest.

³² See, e.g., *Assembly of the State of California v. Public Utilities Commission* (1995) 12 Cal.4th 87; *California Manufacturers Association v. Public Utilities Commission* (1979) 24 Cal.3d 836; *Northern Cal. Power Agency v. PUC* (1971) 5 Cal.3d 370; *Pacific Telephone and Telegraph Co. v. Public Utilities Commission* (1965) 62 Cal.2d 634; *Richfield Oil Corp. v. Public Utilities Commission* (1960) 54 Cal.2d 419; and *California Water & Telephone Co. v. Public Utilities Commission* (1959) 51 Cal.2d 478.

³³ *Richfield Oil Corp. v. Public Utilities Commission* (1960) 54 Cal.2d 419, 434.

³⁴ 51 Cal.2d at 501.

“Although the Commission is not bound by the dictates of the anti-trust laws, it is clear that anti-trust concepts are intimately involved in a determination of what action is in the public interest, and therefore the Commission is obliged to weigh anti-trust policy.” 5 Cal.3d 370 at 377, quoting Northern Natural Gas Co. v. Federal Power Comm’n (1968) 399 F.2d 953, 958.

In the *Northern Cal. Power Agency* case, the Court annulled an order of the CPUC for failing to adequately consider the respect in which the utility activities which it had approved – contracts under which PG&E proposed to purchase steam for a new generating facility – would in fact violate both state and federal antitrust laws:

*We conclude that the Commission erred in failing to give adequate consideration to, and to make appropriate findings on, the issues raised by the contention of NCPA [the complaining Petitioner] that the contracts under which PG&E plans to purchase steam for the new generating units violate both state and federal antitrust laws. We, therefore, annul the decision.*³⁵

In its reasoning, the Court articulated a further reason why agreements of the sort reached by the CPUC and NRG cannot be done in private, but rather require a public hearing process, with specific findings by the Commissioners on potential antitrust issues:

“Although the Commission is not bound by the dictates of the antitrust laws, it is clear that antitrust concepts are intimately involved in a determination of what action is in the public interest, and therefore the Commission is obliged to weigh antitrust policy.” (Fn. omitted.) (399 F.2d at p. 958.)... “[B]ecause competitive considerations are an important element of the “public interest,” we believe that in a case such as this the Commission was obliged to make findings related to the pertinent antitrust policies, draw conclusions from the findings, and weigh these conclusions along with other important public interest considerations.” [Citations.] (Fn. omitted.) (Id. at pp. 960–961.) 5 Cal.3d at 377–378.

Settlement agreements reached in confidential negotiations provide no public record as to what was and was not considered by the Commission. When it comes to evaluating whether the CPUC adequately discharged its obligation to consider the antitrust implications of its actions, the lack of a written record of the Commissioners’ considerations becomes highly problematic. On the other hand, as discussed above, NRG, as an EVCS provider, is not regulated by the CPUC. The legal question then becomes whether the CPUC must consider and make findings regarding the alleged antitrust implications of its settlements with litigation adversaries. Under one view, at least, the CPUC’s Agreement with NRG presented exactly the same situation as in the *Northern Cal. Power*

³⁵ 5 Cal.3d at 372.

Agency case: a record absolutely devoid of any evidence as to how – *if at all* – the respondents discharged their duty to carefully weigh the antitrust implications of their actions.

3 The Agreement Raised Important Economic Questions with Respect to Competition in the Electric Vehicle Charging Station Market

3.1 Background on EVCS Industry

There are three basic levels of electric vehicle charging stations along with corresponding functionality requirements and safety systems. Each specification has tradeoffs with regards to charging times, cost, and ease of installation, as well as stresses placed on the electrical grid.

Level 1 stations rely on the lowest voltage (120 AC) commonly found in both commercial and residential buildings. These stations are the easiest to set up, but long charging times typically required by electric vehicles – over 12 h for a plug-in hybrid electric vehicle (“PHEV”) with a 16 kWh battery like the Chevy Volt – limit their efficacy. Level 2 stations rely on a higher voltage (240 AC) and can charge a battery in less than half the time of a Level 1 station. Level 2 stations often require a dedicated circuit for plug-in electric vehicle (“PEV”) charging, but are regarded as the preferred method of charging at home. Level 3 or DC Fast Charging stations require the conversion of three-phase alternating current electricity to direct current (“DC”) off-board of the PEV. Typically, a DC Fast Charger provides a 50% recharge in 10 to 15 min. DC Fast Chargers can be applied in residential or commercial charge environments; however, the practicality of implementing such chargers in a residential environment is questionable because of high fixed costs and the required upgrades to the typical home’s electrical system. High-voltage safety issues are also a concern in residential settings.

As of May 1, 2012, there were approximately 800 public EVCS in California, only three of which contained (five) DC Fast Chargers.³⁶ DC Fast Chargers are a critical component of the public EVCS network. A simple example is illustrative. Consider a vehicle that is short on power to get home. A Level 2 charger

³⁶ U.S. Department of Energy Alternative Fuels Data Center, 2013, “Electric Vehicle Charging Station Locations.” Accessed at: http://www.afdc.energy.gov/afdc/fuels/electricity_locations.html.

would require charging for a considerable amount of time – potentially hours. By comparison, a DC Fast Charger would require minutes.

Locations for charging stations are typically acquired by direct negotiation with property owners (i.e., hosts). Potential hosts include entities from the private, government, and educational sectors such as retail chains and shopping centers, owners of apartment and office buildings, offices of federal, state, and local governments, and universities. The agreement between the host and service provider typically designates which party is responsible for the costs of installing and operating the chargers (in particular, electricity costs) and the division of revenue from access fees and possibly advertising. It is self-evident that there are a limited number of economically viable charging stations, dependent on the number of operating electric vehicles and perhaps more importantly on a limited number of prime locations.

An “intelligent” or “networked” Level 2 charger generally costs less than \$5000.³⁷ Intelligent chargers are durable and offer smart card and credit card readers, advanced displays, cellular communication and auto service diagnostics, intelligent power flow, internal metering, and “gateway” master/slave configurations to communicate to the outside world and to other stations close in proximity. They are also equipped with remote driver billing software and smart grid compatibility. Major installation costs for new charging stations include labor, materials (conduit, wire, breakers, etc.), taxes, permits, and signage for apartments and commercial installs. BC3 and the Bay Area Council (2011) report an average installation cost of \$3457 per charger based on 120 projects over a 10-year period.

Costs for DC Fast Chargers are substantially higher. They generally range from \$15,000 to \$40,000,³⁸ but can be as low as \$10,000.³⁹ Installation costs vary considerably depending on the source of the cost estimate and the characteristics of the host property. The Electric Transportation Engineering Corporation⁴⁰ advises that the installation cost for a station with two \$25,000 DC Fast Chargers

37 Business Council on Climate Change (BC3) and Bay Area Council. 2011. “Electrify Your Business: Moving Forward With Electric Vehicles. A Bay Area Business Guide.” Accessed at: http://www.bc3sfbay.org/uploads/5/3/3/9/5339154/electrify_your_business.pdf.

38 *Ibid.*

39 Jim Motavalli, 2011, “Nissan to Market D.C. Fast Charger for Under \$10,000,” *New York Times*, November 11. Accessed at: <http://wheels.blogs.nytimes.com/2011/11/11/nissan-to-market-d-c-fast-charger-for-under-10000/>.

40 Electric Transportation Engineering Corporation, 2010, “Electric Vehicle Charging Infrastructure: Deployment Guidelines for the Greater San Diego Area.” Accessed at: <http://www.theeproject.com/downloads/documents/Electric%20Vehicle%20Charging%20Infrastructure%20Deployment%20Guidelines%20for%20the%20Greater%20San%20Diego%20Area%20Ver%203.2.pdf>.

is approximately \$17,000, which equates to a fully installed cost of \$67,000. BC3 and the Bay Area Council⁴¹ advise that the cost of a fully installed DC Fast Charger station starts at \$45,000 and can exceed \$100,000 – implying a range from \$30,000 to greater than \$60,000 for installation costs.

3.2 General Impact of Subsidies on Competition

Subsidies generally take the form of direct investments made by governments that are designed to affect firm or individual behavior. An agreement to release California ratepayer claims in return for a commitment by the market participant to invest in the California EVCS marketplace has the hallmarks of a subsidy and, from an economic perspective, can be analyzed as such. One can therefore assume that the behavior of the entity receiving the release and forgiveness of public claims (i.e., the subsidy) will be affected (at least to some extent) by the subsidy. Moreover, in a competitive setting, changes in the behavior of one firm will generally change the behavior of other firms (i.e., those not receiving the subsidy). Economic theory states that subsidies can affect both subsidized and non-subsidized firms' entry and exit decisions and pricing and output decisions.⁴² In the current case, where one market participant received a large subsidy and other competing firms did not, the impact may be substantial.

The party receiving the subsidy (i.e., the favored competitor) may enter the market more aggressively in response to the subsidy. All other things being equal, while potentially damaging to individual competitors, this might be considered a societal benefit. Electric vehicle charging services needed by California drivers are provided, with sales of electric vehicles being encouraged. However, one must also account for the fact that competitors may be less likely to spend their own limited resources in California when confronted with a subsidized competitor. Industry participants have described examples of potential hosts who have decided to “wait and see” if they can get the subsidized firm to install EVCS at reduced cost or even for free. When faced with this type of resistance, the remaining market participants are more likely to deploy their scarce resources elsewhere. The effect of the subsidy in this case, therefore, may well be to crowd out private investment

⁴¹ Business Council on Climate Change (BC3) and Bay Area Council, 2011, “Electrify Your Business: Moving Forward With Electric Vehicles. A Bay Area Business Guide.” Accessed at: http://www.bc3sfbay.org/uploads/5/3/3/9/5339154/electrify_your_business.pdf.

⁴² See, e.g., Dennis W. Carlton and Jeffrey M. Perloff, *Modern Industrial Organization*. (2005), 608–11; and Avinash K. Dixit and Albert S. Kyle, “The Use of Protection and Subsidies for Entry Promotion and Deterrence,” *American Economic Review* 75, no. 1, (1985), 139–152.

by the non-subsidized firms. The net impact of these two effects is unclear, but under plausible assumptions could lead to an overall decrease in investment by the subsidized and unsubsidized firms, to the injury of competition.

The subsidy may also affect the favored competitor's output and pricing decisions. A subsidy that reduces a firm's costs will cause that firm to increase its output (i.e., by building more charging stations) and reduce its prices. Competing firms will have to react – rival firms will have to match price reductions in order to compete or will suffer a reduction in output (i.e., by building fewer charging stations). This may have a short-term societal benefit, but in the long-term it drives the non-subsidized firms from the marketplace, leaving the subsidized firm with market control.

In the extreme, a potential situation is presented that would enable the favored competitor to eventually engage in predatory pricing. Pricing is considered predatory when it is below the short-run profit maximizing price, and it is designed to influence a rival's behavior. In the worst-case scenario, the rival is induced to leave the market, or a potential entrant is discouraged from entering. Less-severe outcomes include less-aggressive competition, higher costs for the rival, or a reduction in innovation. The predator expects to recover its costs from this strategy by earning more in the future because of less-vigorous rivals, or perhaps no rivals at all.

3.3 Potential Procompetitive Effects of the Agreement

In March 2012, California Governor Jerry Brown announced that he had signed an executive order laying the foundation for 1.5-million zero-emission vehicles on California's roadways by 2025. "This executive order strengthens California's position as a national leader in zero-emission vehicles," said Governor Brown, "and the settlement will dramatically expand California's electric vehicle infrastructure, helping to clean our air and reduce our dependence on foreign oil."⁴³ The order sets the following targets: by 2020, the state will have established adequate infrastructure to support 1-million zero-emission vehicles in California; by 2025, there will be 1.5-million zero-emission vehicles on the road in California. As of March 2013, approximately 23,000 electric vehicles had been sold in California.⁴⁴ This figure is far short of the targets announced by Governor Brown.

⁴³ Office of Governor Edmund G. Brown Jr., 2012, "Governor Brown Announces \$120 Million Settlement to Fund Electric Car Charging Stations Across California," March 23. Accessed at: <http://gov.ca.gov/news.php?id=17463>.

⁴⁴ The total is based on applications for Clean Vehicle Rebate Project (CVRP) rebates: 135 in 2010, 4521 in 2011, 11,219 in 2012, and 4700 through March 2013. The total accounts for about 2300 Chevy Volts that were not included until February 2012.

The required investments in EVCS can help to solve the chicken-and-egg problem that currently limits sales of electric vehicles. Electric vehicles and EVCS are complementary products in an economic sense. An electric vehicle is useless without being able to charge it, and its usefulness would be greatly reduced without the availability of public charging stations that allow drivers to travel further from home than 50% of their vehicles' single-charge range. Conversely, EVCS have no use unless electric vehicles need to be charged. Thus, the demands for electric vehicle charging services on the one hand and electric vehicles on the other are linked and mutually reinforcing. The more electric vehicles on the road, the greater the demand for electric vehicle charging services will be. The greater the availability of electric vehicle charging services, the greater the demand for electric vehicles will be.

NRG's obligated investments will create a new supply of electric charging services. This additional availability of electric vehicle charging services will increase demand for electric vehicles. The additional electric vehicles on the road as a result of the obligated investments will increase the demand for electric vehicle charging services. With the knowledge that there is a facility nearby that can deliver a significant charge in a short period of time, the driver is more comfortable using the full range of the vehicle. Without this safety net, the driver is more concerned about maintaining the vehicle battery at a higher state of charge. Therefore, the availability of DC Fast Charger services may go a long way in the establishment of electric vehicles.

3.4 Potential Anticompetitive Effects of the Agreement

3.4.1 First-Mover Advantage in Securing Prime Locations for DC Fast Charger Stations

The significance of first-mover advantages or speed to market is the subject of an extensive literature. One way in which a firm can attain a first-mover advantage is by preempting scarce resources, which leaves competitors with inferior assets

⁴⁵ Studies have modeled these factors with sophisticated mapping software to identify the optimal locations for gas, hydrogen, and alternative-energy fueling stations. See, e.g., Michael Kuby and Seow Lim, "Location of Alternative-Fuel Stations Using the Flow-Refueling Location Model and Dispersion of Candidate Sites on Arcs," *Networks and Spatial Economics* 7, no. 2, (2007), 129–152; and Michael Kuby, Lee Lines, Ronald Schultz, Zhixiao Xie, Jong-Geun Kim, and Seow Lim, "Optimization of Hydrogen Stations in Florida Using the Flow-Refueling Location Model," *International Journal of Hydrogen Energy* 34, no. 15, (2009), 6045–6064.

with either lower demand or higher cost. Examples of scarce assets include input factors such as natural resources, labor, and prime manufacturing and retailing locations. The magnitude of the first-mover advantage is greatly influenced by the number of prime locations and cost of constructing a station. As discussed above, costs estimates vary considerably. The Agreement contemplates 200 stations at an average cost of \$252,500, for a total of \$50.5 million. However, if one uses the range from BC3 and the Bay Area Council – \$45,000 to more than \$100,000 – \$50.5 million would roughly cover between 500 and 1100 DC Fast Charger stations.

Several factors govern the prime locations for public EVCS, especially services with DC Fast Chargers.⁴⁵ Prime locations are spaced far enough apart to create a wide refueling network, but also proximate to population centers or other destinations. DC Fast Charger stations are best placed in retail locations where users are likely to linger for 15 to 30 min, such as coffee shops and convenience stores. The deployment of DC Fast Charger stations along popular transportation corridors is especially important to facilitate long-range travel for electric vehicles with minimal delays. And although EVCS can be identified through digital wireless technology, visual identification is still valuable. Additional factors include ease of ingress and egress, access to power, and area safety. Indeed, NRG's own website states that "[n]ot every location is right for an eVgo Freedom [DC Fast Charger] Station."⁴⁶

The subsidization of one competitor's construction of DC Fast Charger stations gives it an advantage in securing the prime locations for these facilities. More specifically, the stations are installed at zero cost to the host.⁴⁷ The best locations can be considered as equivalent to scarce assets. If all the best locations are gone, less well-capitalized or non-subsidized competitors will be relegated to secondary locations where revenue is likely to be lower. Moreover, one can readily see the importance of primary locations in the successful establishment of a network of public charging stations. In other words, consumers will prefer to join a network that has superior charging locations. In turn, this will allow the network (which now has more revenue) to build a larger network, which in turn will attract additional customers.

Notwithstanding the above, one can argue that the best locations are not scarce. Numerous gasoline stations of different brands at major highway

46 NRG EV Services LLC, 2013, "Host an eVgo Station at Your Retail Property." Accessed at: <https://www.evgonetwork.com/you-own-manage-or-are-a-tenant-at-a-retail-property/>.

47 Although §4(a)(ii) of the Agreement specifies that NRG is to own and operate the stations for at least 4 years, the benefits to the host are obvious. For example, a coffee shop or convenience store with a newly installed DC Fast Charger in its parking lot will undoubtedly see an increase in its customers.

interchanges and street intersections compete vigorously with each other. In these cases, many competitors have an ideal location, as opposed to one claiming the only prime location and foreclosing others from competing.

3.4.2 Barriers to Entry

It can be extremely difficult for new firms to enter markets where incumbent firms have established a large base or network of stations. There may be natural barriers to entry in the market for electric vehicle charging stations. One can assume that it is important to have a large number of chargers in non-residential spaces. As more people join a given charging network, the service provider will likely add more charging stations to meet the increased demand. In addition, an electric vehicle owner will be able to travel farther from her home because the additional stations are more geographically dispersed. Due to the increased convenience of charging an electric vehicle within this particular network, the network will be more attractive to owners of electric vehicles. This process, which one can argue that the Agreement would encourage, can eventually propel the service provider into a position of market power.

3.4.3 Pricing Opportunities

The market for EVCS is more analogous to cellular phone networks than gasoline stations. For example, gasoline-powered cars can simply purchase fuel at any available gas station; the economic differences between one station and another are relatively limited. In contrast, the physics of electric charging will likely dictate that the consumers in the EVCS market will likely contract with a single or preferred provider. Consumers with electric vehicles usually prefer to charge their vehicles at locations where they spend the majority of their time (i.e., home, workplace, etc.), and a given commercial location such as an office building or parking lot typically houses only one service provider. In such cases, electric vehicle owners cannot simply choose any available EVCS. To the extent that the consumer sought a charge at an out-of-network facility, she would pay set or market rates similar to paying substantial roaming charges to a third-party cellular provider. In fact, the Agreement itself indicates different prices for subscribers and non-subscribers (i.e., single-use customers).⁴⁸

⁴⁸ Agreement, §4(b)(iii).

For example, NRG's Texas-based eVgo network currently offers a set of service agreements with prices ranging from \$39 to \$89 per month.⁴⁹ The plans vary according to contract length, activation fee, and whether home charging is included. One salient feature of all the plans is that subscribers receive unlimited charging at NRG DC Fast Charger and Level 2 stations. Furthermore, non-subscribers cannot even access the stations. Given such a pricing arrangement, it is unlikely that a subscriber would use an out-of-network charging station except in limited circumstances.

Another business model is ECotality's Blink network.⁵⁰ After registering a payment method with the Blink network, subscribers pay around \$1.50 per hour to charge their EVs at Blink charging stations. For \$30 per year, subscribers can charge at cheaper rates of around \$1.00 per hour. Non-subscribers pay rates of around \$2.00 per hour. Again, even with this pricing plan, consumers are encouraged to join and use a single provider network.

A third business model is pay as you go. Prices at stations in Coulomb Technologies' ChargePoint network are set by the host. Prices are available online and quoted by the hour. Continuing with the cellular phone analogy, these stations are a niche product similar to pay-as-you-go plans offered by cellular providers.

Since the Agreement does not specify the pricing mechanism, one can assume *arguendo* that the eVgo pricing in Texas is a reasonable proxy for the pricing NRG may implement in California. It is therefore interesting to note that under the terms of the Agreement, the price per single charge to non-network subscribers shall be no less than \$7, and no more than \$15 during peak hours or \$10 during off-peak hours.⁵¹ The eVgo "On The Go 12 Months Plan" costs \$39 per month, with a \$19 activation fee. The monthly fee equates to between two and five charges per month at peak hours (assuming off-peak-hour charging is done at home). Moreover, if NRG elects to charge non-subscribers the maximum the Agreement permits for a single use during peak hours (\$15), it is evident that an electric vehicle owner anticipating the need for more than two charges a month would be motivated to join NRG's subscription plan.

Given the nature of demand for EV charging, the figures discussed above are substantial. Based on our conversations with industry participants, we understand that a typical user of a DC Fast Charger station will only charge the battery

⁴⁹ NRG EV Services LLC, 2013, "eVgo Charging Plans Offer Flexibility, Freedom and Peace of Mind." Accessed at: <https://www.evgonetwork.com/charging-plans/>.

⁵⁰ ECotality, Inc., 2012, "Blink Membership." Accessed at: <https://www.blinknetwork.com/membership.html>.

⁵¹ Agreement, §§4(b)(ii) and (iii)(2).

between 10% and 30%, or just enough to ensure that he or she reaches home/work without running out of power. Demand for such “splash-and-go” charges, which last only several minutes (depending on charging conditions), increases the likelihood that the consumer will pull into a DC Fast Charger station. Thus, the Agreement itself may provide an economic incentive for consumers to join the NRG network. Furthermore, the construction of 10,000 Make-Ready Stubs and 1000 Make-Readies Arrays is critically important. As noted in the Agreement, the stubs are intended for the provision of dedicated charging services to a subscriber base, not the general public.

3.4.4 Switching Costs

Switching costs exist when the cost to try a new product is higher than the cost to retain an existing product. Switching costs can arise when buyers develop brand-specific know-how that is not fully transferable to substitute brands. They can also arise where consumers are locked into long-term service agreements that mandate early termination penalties. For the host (i.e., the owner of the charging location), switching costs include the cost of removing and installing charging equipment. As discussed earlier, the cost of a DC Fast Charger station typically ranges from \$45,000 to over \$100,000. In addition, the initial service provider may have specific know-how about hosts that other service providers cannot quickly replicate, or provide customized after-sale services to hosts. For a consumer, there will be switching costs if she is locked into a long-term service plan that mandates an early termination penalty. There are also costs related to learning the locations of alternative charging stations.

3.4.5 Exclusivity at Make-Ready Stubs

Under the terms of the Agreement, NRG has the exclusive right to install chargers at Make-Ready Stubs for a period of 18 months following completion of each stub.⁵² Subscriptions for chargers installed at Make-Ready Stubs cannot exceed 1 year.⁵³ Hosts have an economic incentive to contract with NRG to install Make-Ready Stubs on their premises. They are installed at no cost to them, per the Agreement, and they also receive ownership of the Make-Ready Stubs.⁵⁴ Use of

⁵² Agreement, §4(c)(v)(2).

⁵³ Agreement, §4(c)(vii)(3)(A).

⁵⁴ Agreement, §4(c)(v)(1).

chargers installed at the Make-Ready Stubs is limited to NRG subscribers per the Agreement. As a result, more owners of electric vehicles will subscribe to NRG's services in order to use the chargers installed at the Make-Ready Stubs. Moreover, it is possible that many of these subscribers will also want access to NRG's network of DC Fast Chargers.

4 Conclusion

Only the District Courts of Appeal and the California Supreme Court have jurisdiction to consider challenges to the actions of the CPUC. Each District Court of Appeal conducts its business with panels of three justices. ECotality filed its court challenge directly with the First District Court of Appeal in San Francisco in May 2012, drawing one of that District's three-judge panels. Within a month, extensive papers, with declarations of witnesses, had been filed by all sides. By June 20, 2012, when the last papers were filed, the case stood fully briefed and ready for decision. And, for months, that is where it sat. Finally, on October 12, 2012, one of the three justices on the panel issued a terse one-line order summarily dismissing the case while giving no statement of reason. The actual order merely read, "The petition for writ of mandate is denied."⁵⁵

It should be noted that while case law provides that "for an appellate judgment to be binding, at least two justices must concur," neither of the two other judges on the panel joined in the order of dismissal.⁵⁶ Consequently, the Court provided no guidance on any of the issues discussed in this paper, and no precedent was established. Whether, and to what extent, California law permits "government by litigation" will unfortunately have to wait another day, and perhaps other circumstances, to be decided. The economic impact of the settlement will ultimately be decided in California's EVCS market.

⁵⁵ *Ecotality, Inc. v. Public Utilities Commission, et al. and NRG Energy, Inc.* (October 12, 2012 Order).

⁵⁶ *Paradise Hills Associate v. Procel*(1991) 2365 Cal. App. 3d 1528, 1537.



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