Best Practices For Electric Vehicle Market Transformation

EVgo
FAST CHARGING

October 23, 2019

Rates

"I love you guys and I think your prices are fair! I save $14 a day over gas thanks to you guys!! Keep up the good work and please, please, please build more DCFC stations!!" – EVgo Customer

As EVgo has expanded our network to more than 1,200 electric vehicle (EV) fast chargers across 34 states and 66 metropolitan markets, we have found utilities and regulators eager to work with us on rate design because they appreciate the "beneficial electrification" effect of incremental load. Ratepayers realize the savings, and EVgo's customers appreciate the convenient, reliable, and affordable opportunities to fast charge their electric vehicles in locations convenient to where their live, shop, and work.

As rate design for home and workplace EV chargers is becoming familiar to many regulators, we are seeing growing interest in how DC Fast Charging ("DCFC") specific rates can expedite EV adoption, drive beneficial electrification that maximizes the grid benefits of EV charging and reaches new populations.[1]Level 2 chargers provide inexpensive, gradual development of access to infrastructure on a "one car, one charger" basis. In contrast, DCFC investments vastly expand charging access on a "one charger, one neighborhood" basis. Some use cases, e.g. electric rideshare and carshare, simply can't exist without robust DCFC infrastructure. Where we have the best designed rates, consumers experience the benefit of lower pricing.

We're working with regulators and utilities to accelerate EV infrastructure using best practices based on sound ratemaking principles. Here are the options:

Adopt Time Variant Volumetric Rates to Best Reflect True Cost Causation.

All parts of the electric system from generation through distribution have loads and costs that vary with time, and modern metering technology permits granular visibility of these costs. A weighted TOU rate, set higher than the volumetric component of a capacity-weighted rate, would capture all DCFC cost causation without unduly penalizing low loads during early stages of market adoption or in non-urban regions.[2]

Encourage Early Adoption and Full Lifecycle Recovery by Adjusting Rates to Match Growing Load.

Charging infrastructure visibility and access enable EV adoption and therefore should modestly precede predicted step function changes in vehicle deployment.[3]As EV adoption expands, load growth by site will transform variable demand into more even, flatter load profiles. With nearly ten years of experience, EVgo's operating history demonstrates how low load factors by site evolve with EV market penetration into beneficial, high load factor demand. Smart rates both encourage early – stage adoption and achieve lower lifecycle cost *by anticipating and tracking to this transition.*[4]

Use Temporary Demand Charge Holidays to Adapt Over Time.

Several regulators have determined that the simplest way to drive the progression from early market incentivization to lifecycle recovery is a demand charge "holiday." These offer a significant discount – or multi-year suspension of demand charges followed by a three to five year "ramp" back into a more conventional rate. Commissions have chosen both to seek recovery of these early discounts in with later demand or volumetric upcharges – or retain them as market transformation incentives.[5]

[1] For discussion of rate design in the Northeastern US reducing EV penetration, see https://scripts.betterenergy.org/reports/GPI_DCFC_Analysis_July_2019.pdf
[3] https://theicct.org/publications/charging-gap-US
[4] Conventional designs intended for commercial building loads can result in wildly disproportionate treatments; many EVgo chargers in early – adoption areas experience rates dominated as much as 90% by demand expenditures. https://www.rmi.org/wpcontent/uploads/2017/04/eLab_EVgo_Fleet_and_Tariff_Analysis_2017.pdf
[5] Southern California Edison's TOU-EV-8 tariff phases in typical demand charges over a 4-year period: https://www1.sce.com/NR/sc3/tm2/pdf/ce401.pdf

Use Load Factor Tracking Rates to Adapt Automatically.

In the 2019 Xcel Colorado rate case, parties proposed a rate which adjusts the ratio of demand to volumetric charges automatically instead of over time, using interval-metered load factor. The DCFC operator experiences the same per kWh rate regardless of load factor; this constant rate can then be adjusted to achieve full recovery.

Improve Fairness at the Margins with Longer or More Coincident Demand Charge Metering Intervals.

Any rate with a fixed demand charge will slow investment in DCFC due to the economic hurdle for early penetration. A partial mitigant is to charge each *customer* – not each *meter* – for their maximum monthly demand, and/or only when coincident to system peaks. Our experience is that EVgo's fleet of DCFC in low usage markets are highly noncoincident with one another, such that this type of aggregate per-customer demand better captures true cost causation.[1]

Leverage Previous Rates Designed to Industry Specific Load Shapes.

Many Commissions already have rates in place designed to accommodate similarly "spiky" loads – for example, agricultural uses – where rate designs intended for commercial use had disproportionate impacts on off-peak users. Simply maintaining DCFC eligibility for "Low Load Factor" or "Pivot Irrigation" rates can be a simple, effective adaptation.[2]

Use "Allowance" Pricing to Capture Future Projected Revenue.

Currently, line extensions from the grid are generally charged in suspense to the customer. If revenue over the first years of operation pays for a specified return on the original cost, it is waived. A similar treatment could be applied to DCFC rates: set a capacity-metered amount to be recovered, with an appropriate return, as a "suspense account" to be repaid with volumetric charges.

Ensure Optimal Economics for All with Optional Rates.

Charging is not a one-size-fits-all application. Rural, standalone, low usage, high capacity chargers have different economics and cost causation than suburban ones served on the host power of a large retailer. Enabling choice among qualifying rates – throughout a charger's lifecycle – optimizes economics while enabling near-term investment.

Preserve the Existing Infrastructure Base with Universal Application of Rates.

All rates intended to expand charging infrastructure should apply to the installed base as well. In anticipation of significant increases in demand, private providers have already installed thousands of charging stations nationwide. Hundreds of stations will approach their end of life of the original charging equipment in the next five years, and/or were built with "future proofing" enabling significant expansion.

Preserve Transparency by Avoiding Subscription Capacity Rates.

There has been significant recent attention to "subscription" capacity rates, in which customers specify – and pay for – blocks of demand in advance. In these rate designs, there is no variation in charge below the subscription level, but significantly punitive charges above it. The structure is admirably simple; however, in the early stages of market development, where usage even over the course of a single year can be difficult to predict, the result will be a demand charge in which the customer must always overestimate – and overpay for – their demand creating a punitive and counterproductive rate design.

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[1] For more on this topic, see e.g. "Rate Design to Maximize Grid Benefits: Smart EV Rate Design is Smart Rate Design" - Presentation by Carl Linville, Regulatory Assistance Project to the CPUC https://www.raponline.org/wp-content/uploads/2018/06/rap_linvill_cpuc_zev_rate_design_2018_june_7.pdf

[2] See, for instance, broad DCFC use of Xcel – Colorado's "SG-L" low load factor rate https://www.xcelenergy.com/staticfiles/xe/PDF/Regulatory/CO-Rates-&-Regulations-Entire-Electric-Book.pdf (p. 44)

Sample Rates

Utilities and their regulators across the country are recognizing that the demand charge barrier must be breached by new rate designs if the public infrastructure for EV charging is to grow. Below are several samples.

Southern California Edison (SCE)**'** s new commercial EV rate schedules[3] are all-volumetric TOU rates with strong price signals to consume energy in off-peak and super-off-peak periods and to limit usage during on-peak or mid-peak period. One key feature is a five-year holiday from all demand charges, with the expectation that EV penetration will be higher after the holiday. In years six to ten, most of the demand charges applicable standard commercial rates will be phased back into the EV rates. SCE's standard commercial and industrial (C&I) rates still include significant non-coincident demand charges for transmission costs and a portion of distribution costs, although the CPUC has moved to gradually reduce non-coincident demand charges, replacing them with higher peak demand charges or higher peak energy rates.

Connecticut Light & Power (Eversource) has offered an Electric Vehicle Rate Rider Pilot (EVRRP) since July 1, 2014[4]. This pilot program applies to the rates charged to DCFC facilities in the CL&P service territory. The utility converts the demand charges of the applicable commercial rate schedule to an equivalent dollar per kWh charge for all kWh utilized by the DCFC customer during each billing period. These equivalent rates are based on the average $ per kWh of costs allocated to the demand charge portion of each commercial rate (i.e. by dividing the total demand charge costs by the total kWh, for each rate class). By an order issued March 6, 2019, the Connecticut utility regulator has extended this pilot program for another three years[5].

Pennsylvania Electric Company (PECO) received regulatory approval in late 2018 for a new DCFC rider that offers commercial EV charging facilities a credit against the applicable distribution demand charge for up to 36 months[6]. T= from July 1, 2019 through June 2024. The credit is equal to 50% of the connected DCFC nameplate capacity. For example, a DCFC station with a nameplate charging capacity of 200 kW would receive a demand credit each month of 100 kW. Since, the station's billed distribution demand may not reach 200 kW in any month, so this program could provide more than a 50% reduction in distribution demand charges.

PacifiCorp has implemented Schedule 45 in its Pacific Power service territory in Oregon. This rate is applicable to EV charging stations that have peak demands below 1 MW and are separately metered from other electric loads. Schedule 45 features a discount on the demand charge which begins at a 90% discount in year 1 (beginning May 15, 2017), decreasing by 10% per year to zero in year 10 (beginning May 15, 2026). The demand charge discount is offset by an on-peak[7] volumetric rate surcharge that begins at 90% of $0.107 per kWh on May 15, 2017 and that also decreases over the same 10 years by 10% per year. However, the demand charges used in this rate structure are non-coincident demand charges that apply in all hours.

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[3] See CPUC Decision 18-05-040, Ordering Paragraph 45, and SCE Advice Letter 3853-E (filed August 29, 2018) to implement the new commercial EV rates approved in that order.

[4] See https://www.eversource.com/content/docs/default-source/rates-tariffs/rider-ev.pdf. This rate rider was approved in the Connecticut Public Utilities Regulatory Authority's decision in Docket No. 13-12-11, dated June 4, 2014.

[5] See https://www.eversource.com/content/docs/default-source/rates-tariffs/ev-rate-rider.pdf?sfvrsn=e44ca62_0.

[6] See PECO's Electric Vehicle DCFC Pilot Rider (EV-FC), Tariff Electric Pa. P.U.C. No. 6, at pp. 84-85. Available at https://www.peco.com/SiteCollectionDocuments/CurrentElecTariff.pdf. This tariff was approved in the Pennsylvania PUC's December 20, 2018 opinion and order in Docket R-2018-3000164, at pp. 22-23 and 29.

[7] Pacific Power's on-peak period is 4p-8p weekdays in the summer (April-October) and 6a-10a and 5p-8p weekdays in the winter (November-March).

Hawaiian Electric Company (HECO) offers Schedule EV-F for separately metered public EV charging facilities with peak demands for EV charging not exceeding 100 kW[8]. The rate is an all-volumetric TOU rate, with no demand charges. The lowest rate is in the midday (9am to 5pm) TOU period when new loads are needed to manage the state's high penetration of rooftop solar. However, there are only moderate differences between the TOU periods; true off-peak (10P – 9A) is net $.37 per kWh, on-peak (5 – 10P) is $.40, and mid-peak 9A – 5P is $.32.

[8] Schedule EV-F was established in the Hawai'i PUC's Final Decision and Order No. 35545 in Docket No. 2016-0328, filed on June 22, 2018.

Infrastructure Investment Program Design

"We brought in EVgo chargers because our customers care deeply for the planet and demand the cutting edge in environmental technology. It's gratifying to see that the stations are being used. It's good for us, good for the planet, and great that our customers can get a fast charge and be on their way."- Tristam Coffin, Director of Sustainability & Facilities, Whole Foods Market

Over the next two years, more funds will be invested in U.S. electric vehicle (EV) infrastructure than ever before. EVgo works closely with utilities and regulators to maximize the impact of this enormous opportunity to build infrastructure that enables acceleration of transportation electrification to meet the appetite and needs of American drivers, automakers, and site hosts – like grocery stores, hotels, parking lot operators, and other retailers and local businesses.

EVgo is a first mover and "first learner" in infrastructure program design. As we have expanded our network to more than 1,200 DC fast chargers (DCFC) across 34 states and 66 metro areas, we have monitored every proceeding allocating VW Dieselgate "Appendix D" funding, and we have participated in many DCFC infrastructure program design discussions. Our team also brings significant lessons learned from other fields including solar and smart grid deployments. Across the country, fund administrators tell us that they want to use these lessons to accelerate EV investment for statewide access while maximizing the impact of both public and private funding.

With the right program design elements, state agencies can craft programs that accelerate transportation electrification while building a sustainable, competitive industry. Here are the tools.

Reach New Populations and Create New EV uses with Explicit Budgeting for DCFC.

Level 2 chargers provide inexpensive, gradual charger access on a "one car, one charger" basis. EVgo has demonstrated that DCFC investment accelerates transportation electrification with "one neighborhood, one charger" deployments enabling adoption of EVs in communities without access to dedicated parking. Many urban use cases, like rideshare and carshare, depend on DCFC to get back to business within an hour – not overnight. That's why most states implementing VW Dieselgate settlement programs have explicitly set aside funds for DCFC – and several, like California, Illinois, and New Jersey, have appropriated incremental state funding.

Locate DCFC to Support All Drivers.

During early EV adoption, DCFC was viewed as a solution to assuage the range anxieties of single-family homeowners, especially on trips between cities or across the country. However, with nearly ten years of operating data, EVgo has found that the vast majority of DCFC usage is in denser, urban and suburban areas where not every home has a driveway, attached garage, or in many cases any dedicated parking.[7] Apartment-dwelling EV drivers rely on DCFC for 50-80% of their charging,[8] and this is where EVgo has concentrated our 2019 investments. Administrators should support EV charging that can be transformative in neighborhoods without strong EV adoption.

Achieve Priorities Efficiently with Explicit, Balanced Scoring.

Policy goals for a charging program are diverse and sometimes conflicting. Policymakers may wish to have statewide coverage, though most usage will be concentrated in urban areas; or they may value cost-efficiency while also valuing low-usage, high public investment chargers to ensure rural and statewide access. Another key decision is how to future-proof equipment selection within a fixed budget.

EVgo has found that developers of EV charging infrastructure deliver the most efficient, responsive plan when they are provided an explicit, points-based "scorecard" that transparently illuminates how they can precisely weight and balance their own site planning. Such scoring achieves most of the policy ends any administrator seeks, without overly prescriptive program design that can produce unintended outcomes[1].

Drive Extensive Coverage with Maximum VW Dieselgate Funding, Including Operating Expense.

The Volkswagen VW Dieselgate Settlement allows funders to support 80% of the "acquisition, installation, *operation and maintenance*"[2] of EV charging equipment. The need to invest in public DCFC infrastructure before the step function change in EV availability within the next two years means that most funders will see value in accessing the full 80% to ensure widespread penetration. Cost sharing scoring can optimize expenditure on those sites that see more use.

Similarly, capital investment is not enough. Large utility demand charges can mean that rural and other low usage chargers may cost more to operate than to purchase. States who fund documented "operation and maintenance" costs help make the business case for rural and corridor chargers years earlier than would otherwise be possible.[3]

Encourage Optionality in Payment Methods.

Competitive innovation means accessibility and payment options are rapidly increasing. On top of the convenience offered by app-based payment systems, EVgo's recent announcement of Autocharge means many customers will be able to simply "plug and go" without any interaction with either an app or card.[4] Many contactless and over the phone payments methods are also available. Further, 2019 has seen massive expansion of interoperability among networks.[5] Encouraging multiple payment methods is the best means of ensuring this innovation continues.

Weave Chargers into the Urban Fabric with Sizing That Matches City Use Cases.

Funding agencies have a choice whether to quickly develop a full-coverage network of 50 kW systems or serve a few locations with higher-throughput chargers. High throughput (150+ kW) chargers may be ideal for very short duration highway "fueling station" applications. However, often 50 kW DCFC can be installed on the electrical service of existing commercial locations more quickly, with less capital investment. Not only do less expensive 50 kW DCFC allow broader charging access for the same budget, but the average charge time is well aligned with shopping duration in retail locations. For the driver, siting stations alongside restaurants, shopping, and other retail locations integrates charging time into their daily life and regular routine. For the host city, it makes charging a part of thriving urban life – not just another vehicle trip. With up to three miles of travel per minute of charging, they are an excellent match for urban and suburban driving ranges. Most states implementing Appendix D have set the minimum standard at 50 kW while supporting higher throughput in appropriate places. One approach EVgo has used successfully across the country is to future-proof the site by upgrading the conduit size at initial installation to allow the ultimate replacement of kW DCFC with higher power as car battery capabilities evolve.

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[1] The North Carolina DEQ program scorecard balances these application criteria transparently in a single public rubric: https://deq.nc.gov/about/divisions/air-quality/motor-vehicles-and-air-quality/volkswagen-settlement/vw-settlement-0

[2] https://www.naseo.org/Data/Sites/1/naseo-vw-beneficiary-mitigation-plan-toolkit-final.pdf (emphasis added)

[3] Efficiency Maine's EVSE initiative funds both capital and operating costs https://www.efficiencymaine.com/at-work/electric-vehicle-supply-equipment-initiative/

[4] https://www.evgo.com/about/news/evgo-is-first-north-american-ev-charging-network-to-deploy-autocharge-technology-enabling-an-instant-start-your-charge-experience-without-apps-or-cards/

[5] https://www.evgo.com/about/news/evgo-announces-new-roaming-access-for-ev-charging/ , https://www.evgo.com/about/news/evgo-electrify-america-join-forces-to-increase-ev-public-charging-accessibility-across-the-us/

Enable Comprehensive, Diverse Service with CHAdeMO and CCS.

Supporting both CHAdeMO and CCS connectors enables universal access (including Tesla through a CHAdeMO adapter) at minimal increase in costs. While each DCFC site should support both plug types, developers may adapt their ratio to the local market demand.

Ensure Real Program Results by Screening Applicants for Experience.

The best way to ensure a funding award turns into a charger installation is to require that applicants demonstrate previous experience in the full suite of charging station development activities – from development, design and construction through to customer service and operations and maintenance. Hosts who propose their own installation should be vetted to ensure that they understand and have a realistic expectation of the real world costs and return profile of their systems.[6] For any applicant proposing more than one location, states should further consider network experience, including network design and planning, adequate resourcing to coordinate directly with the granting agency, a focus on reliability, and a deep understanding of operating and maintenance costs.

Use Continuous Funding to Facilitate the Transition Away from Incentives.

Equipment pricing, charger utilization, and capability trends means operators will be steadily less dependent on public funds over time. Administrators should ensure that funding is available continuously, in rolling windows, or in several "phases" per year over the next 3 – 5 years. A single large injection of funding upfront could result in chargers that fail financially due to inadequate usage, or the failure to develop a self-sustaining industry.

In many ways, DCFC deployment resembles energy efficiency or customer-sited renewable deployment and should draw on the experience of those program administrators. They have often found that a smaller amount of funding continuously available drives more balanced, efficient industry deployment than concentrating all development and construction into a few large opportunities.[7]

Simplify Application Evaluation by Standardizing Metrics.

Applicants differ in the accounting treatment of expenses such as warranty and network service, construction management, etc. Some keep these functions in-house while others contract third parties – for lump sums or monthly fees. A variety of business models should be accommodated with the appropriate basis of comparison simply dollars spent per station / dispenser in operation.

Similarly, calculating the emissions benefits of electric vehicle chargers is complex and should be calculated at a program level, not by location. Administrators who do require on location-by-location estimates should provide a standard online calculator for applicant usage. The most critical assumption, of course, is utilization of the charger, and administrators should consider applicant experience when considering their assumptions.

Leverage Developer Experience and Speed Time to Market by Specifying Objectives – Not Locations.

Electric vehicle service providers have sophisticated demand-prediction models, and often existing charger host relationships. Funders can both speed their program's implementation and obtain more "used and useful" sites by allowing the DCFC developers to identify and contract with specific site hosts with flexibility to meet broader program objectives.

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[6] The Charge Ahead Colorado program requires applicants produce a *pro forma* and includes coaching requirements http://cleanairfleets.org/programs/charge-ahead-%20colorado

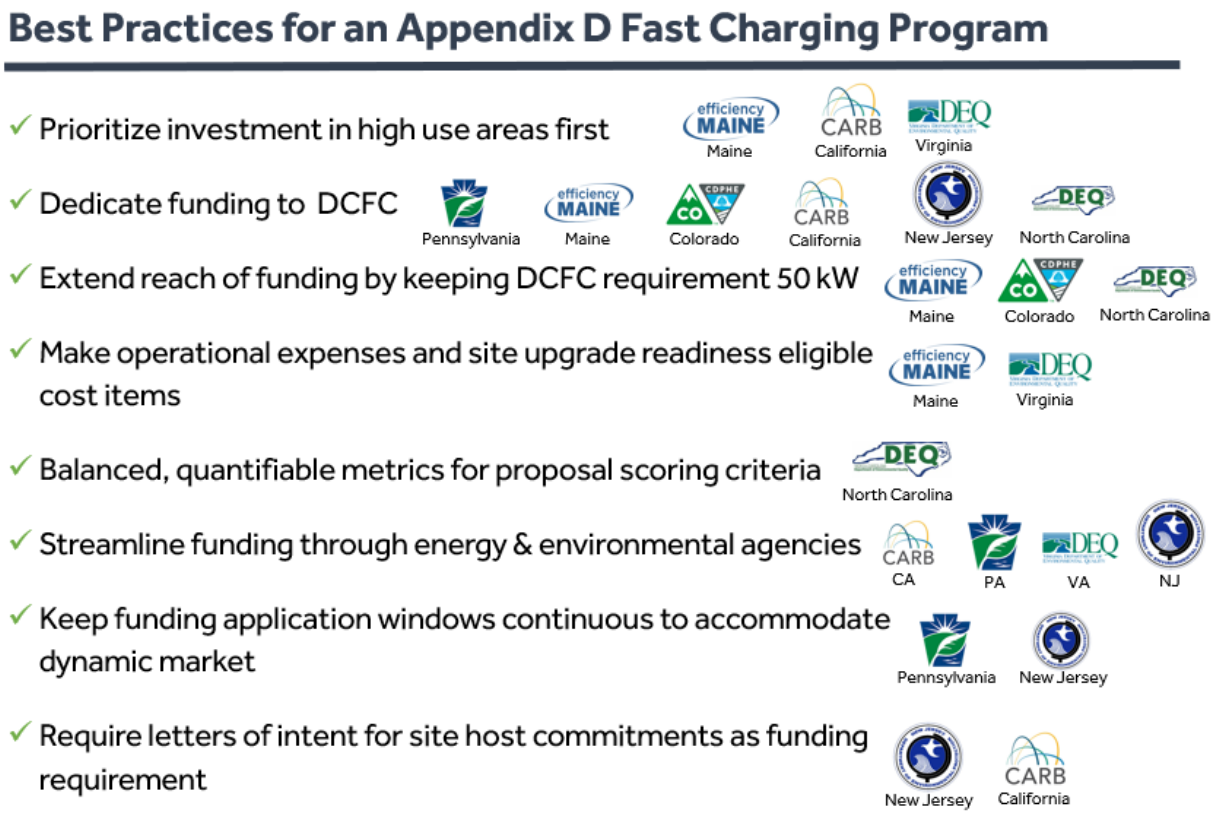
[7] See, for instance, Charge Ahead Colorado's 3 annual windows, (http://cleanairfleets.org/programs/charge-ahead-%20colorado) Pennsylvania's Driving Forward PA multiple annual windows, (http://www.depgis.state.pa.us/DrivingPAForward/), many California CalEVIP programs' continuous availability – or the "declining block" methods of the California Solar Initiative or NYSERDA's "MW Block" solar incentives. (https://www.gosolarcalifornia.ca.gov/documents/CSI_HANDBOOK.PDF / https://www.nyserda.ny.gov/All-Programs/Programs/NY-Sun/Contractors/How-the-Dashboard-Works)

Maximize Cost Benefit with Rapid, Transparent Handling of Stalled Sites.

Full DCFC site development may take as much as one to two years, but it is appropriate to require, monitor and enforce progress along the way, using explicit, transparent criteria such as permitting, equipment onsite dates, or utility process commencement.[8]

Maximize Speed to Market by Coordinating with Other Agencies.

One lesson learned from solar and distributed generation deployment was that familiarization and streamlining work with other authorities was as critical as technological or incentive work in catalyzing development. Authorities having jurisdiction over construction codes and permitting, zoning officials, and the like should be notified of, familiarized with, and incorporated into the planning of any incentive program as early as possible; this will accelerate the exchange of lessons learned and avoid incompatible design elements.[9]



[8] The various California County CalEVIP programs, which impose a 15-month application – to – energization window, make payments according to construction milestones, and has a process to consider extension requests if delays arise outside of the applicant's control (e.g. with permitting or utility delays). For more information, see: https://calevip.org/sites/default/files/2018-08/implementation-manual-scip.pdf . The LADWP requires such designs upfront https://www.ladwp.com/ladwp/faces/ladwp/residential/r-gogreen/r-gg-driveelectric. Of course, program administrators must provide enough advance warning of these requirements to develop such designs.

[9] The California Governor's Office of Business and Economic Development "Electric Vehicle Charging Station Permitting Guidebook" is an excellent example. http://businessportal.ca.gov/wp-content/uploads/2019/07/GoBIZ-EVCharging-Guidebook.pdf

Utility Partnerships

"The chargers are always in working condition, and typically near a store or restaurant so that I don't have to sit & wait in my car in the 100+ degree weather here in AZ" – EVgo Customer

As EVgo has expanded our network to more than 1,200 electric vehicle (EV) DC fast chargers (DCFC) across 34 states and 66 metro markets, we have found utilities and regulators eager to work with us to improve EV drivers' confidence in fast charging availability. We believe that utilities should have a strong role in the facilitation and acceleration of a charging market ultimately led by a competitive private sector. Through private sector deployments, utilities benefit by receiving more load, more quickly, from more efficient processes. The resulting increase in sales volume benefits all ratepayers.[1]Working with regulators and utilities in 34 states, EVgo has collected a set of utility best practices that allows the regulated utility to best support the public-private investment partnership now ramping up nationwide to allocate the Volkswagen Dieselgate Settlement.

We're working with utilities and regulators to drive significant near-term acceleration of transportation electrification, by making sure utilities and private developers each bring their experience to the table. Here are the tools:

Focus Utilities on Their Strengths With "Make Ready" Programs.

Utility "make ready" programs bring rate-based distribution upgrades and branch line extensions into the utility scope, while leaving dispenser ownership, marketing, customer service, and network operation in the hands of experienced private operators. The result leverages utilities' strengths in infrastructure buildout with the scale, learning and efficiencies that private developers have built over thousands of installs and hundreds of thousands of satisfied customers.[2]

Catalyze Rapid Deployment by Permitting Rate-Basing of Interconnection Improvements and Tools.

Utility efforts to facilitate and expedite third-party EV charging infrastructure investment can have dramatic effects on the timing of beneficial electrification. They represent threshold, catalytic, and highly efficient uses of funds and should be treated as rate-based investments on par with capital equipment.[3]

Use Agile, Iterative Planning to Efficiently Respond to a Dynamic Market.

As of July 2019, EVgo estimates that just 8% of the $275 million of the Volkswagen VW Dieselgate Settlement funding earmarked for charging infrastructure has been released. Further, EV manufacturers' plans for the U.S. clearly indicate a step-function increase in supply within two years. However, as with many market disruptions, EVgo anticipates major regional and short-term variations in supply of EVs before 2025 based on demographics and manufacturer delivery priorities, for example to Zero Emission Vehicle (ZEV) states. This dynamic supply-and-demand picture argues for fluid, iterative infrastructure planning.

A best-case charging station investment from conception through commissioning can span as little as 12 months and $200,000; and EVgo finds that most of our site development occurs within 24 months. This means that planners can drive adequate, responsive infrastructure within a 24-month horizon. Sequencing a set of

[1] https://www.synapse-energy.com/sites/default/files/EV-Impacts-June-2019-18-122.pdf
[2] For two well-designed make ready programs, see https://www.pge.com/pge_global/common/pdfs/for-our-business-partners/purchasing-program/bid-opportunities/COA-RFQ-EV-Fast-Charge-EVSE.pdf / https://www.nationalgridus.com/MA-Business/Energy-Saving-Programs/Electric-Vehicle-Charging-Station-Program
[3] See for instance, Various Pepco utilities' "Green Power Connections" teams, rate-based staff put in place to facilitate private sector interconnections of distributed generation and the associated benefits. https://www.pepco.com/SmartEnergy/MyGreenPowerConnection/Pages/My-Green-Power-Connection.aspx

deployment plans using a 12-24-month horizon can ensure territories reach the level of coverage needed to drive adoption while aligning investment with EV market growth.

Obtain Load Data with Existing Load Profiling Authority and Equipment; Cross-Check Other Pilots.

A frequently cited rationale for utility ownership of charging infrastructure is the development of usage data to be used for system planning. Most utilities will have existing, operational DCFC in their territory or nearby[4] ; simply clarifying their existing authority to analyze metering data a utility collects to deliver bills to charging companies could provide the necessary planning information at significantly lower cost than installing their own stations. Utilities should also first reach out to other utilities having similar deployments of EVs, system conditions, climate, etc., before "reinventing the wheel."

Build on Private Sector Efficiency and Learning with Charging-as-a-Service RFPs.

Whether to serve hard to reach populations or as part of a pilot program, some Commissions have elected to permit utilities to own and operate some DCFC infrastructure. In these cases, some utilities have elected to develop an internal capability for development, customer service, and other services, and place RFPs only for equipment and network services. This method also requires each individual utility to relearn the many facets of developing an unfamiliar consumer product. Broader RFPs, which bring in third-party expertise and relationships in siting, customer acquisition, etc., while placing the equipment itself under utility ownership, can achieve faster, more efficient deployment.

Use Utility Rate-Basing Abilities to Serve "Hard to Reach" Populations While Protecting Competition.

Energy efficiency programs have long successfully carefully scoped "hard to reach" programs to serve groups more difficult to serve under competitive business models while ensuring the utility doesn't crowd out private investment.

Ratepayers – and society – benefit from complete network coverage, including low population density areas However, guaranteed rate-based returns for utilities may create an infrastructure overbuild in areas that can attract private investment. Oversaturating an area with DCFC can undermine the utilization that supports competitive business models, driving lower private investment – resulting ultimately in less load, less utility revenue, and less service to customers.

Generally, utility regulators have disapproved utility direct ownership in areas where private sector actors are making their own investments. Where they do permit some rate-based DCFC ownership investments, it should be scoped explicitly to these "hard to reach" areas. Critically, "hard to reach" here is defined more by density than income. Dense, urban populations of all income levels can support competitive DCFC investment as apartment dwellers as well as rideshare and carshare use are often dependent on public charging for EV adoption. In contrast, high income rural or ex-urban areas with more dispersed demand and prevalent home charging may lag in private investment.

Sample scoping criteria could compare geographic holes in coverage with the current number of registered vehicles and include a strong public input element.

Near universal network interoperability among charging providers being implemented through 2019 and 20205 means that users in each territory could roam freely among these networks regardless of which charging provider owns the equipment at a site.

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[4] The National Renewable Energy Laboratory's Alternative Fuels Data Center at http://afdc.energy.gov or the private app PlugShare at www.plugshare.com are excellent resources for locating these.

[5] https://www.evgo.com/about/news/evgo-announces-new-roaming-access-for-ev-charging/ , https://www.evgo.com/about/news/evgo-electrify-america-join-forces-to-increase-ev-public-charging-accessibility-across-the-us/

Support Efficient Competition and Drive Private Investment by Matching Private Sector Pricing.

Commissions may permit rate based DCFC for limited pilot purposes or to reach the hard to reach populations mentioned above. As they do so, they can ensure that investor-supported charging succeeds alongside chargers shielded from competition by matching the customer pricing to statewide or regional averages. This has the additional benefit that any rate-based chargers place more of their expense onto those who benefit most – the direct users.[6]Charging operators build their business around charging for usage and must operate within the same competitive market as any utility-owned chargers.

[6] All of Maryland's investor-owned utility rates track statewide averages, as periodically updated in docket 9478 – docket search at http://psc.state.md.us/ , as does Duke's unapproved proposals in docket E-2 sub 1197 before that Commission: https://starw1.ncuc.net/NCUC/PSC/DocketDetails.aspx?DocketId=91938680-6514-4d49-b64a-273e806567d2

Interconnection

*"Your charging stations are never down, at least not in my experience**. My only suggestion would be more of them"** – EVgo Customer*

As EVgo has expanded our network to more than 1,200 electric vehicle (EV) DC fast chargers (DCFC) across 34 states and 66 metro markets, we have found utilities and regulators eager to work with us on growing the EV market by streamlining the interconnection process.

That means we've been able to work with utilities to improve our processes collaboratively. Together we've both seen more DCFC revenue and load, faster. In all cases we have safely integrated into the grid and into efficient system planning.

In a simple program implementation with strong transparency and engagement by permitting authorities and utilities, an experienced private sector fast charging infrastructure developer can complete the development, permitting, and installation of a DCFC in about a year. However, in some cases, construction of the utility service can take far longer. However, EVgo has experienced utility service completions in as little as 90 business days after key utility process improvements. Interconnection acceleration offers thousands of dollars per month, per charger, of revenue opportunity for utilities – dramatic returns for straightforward process changes.

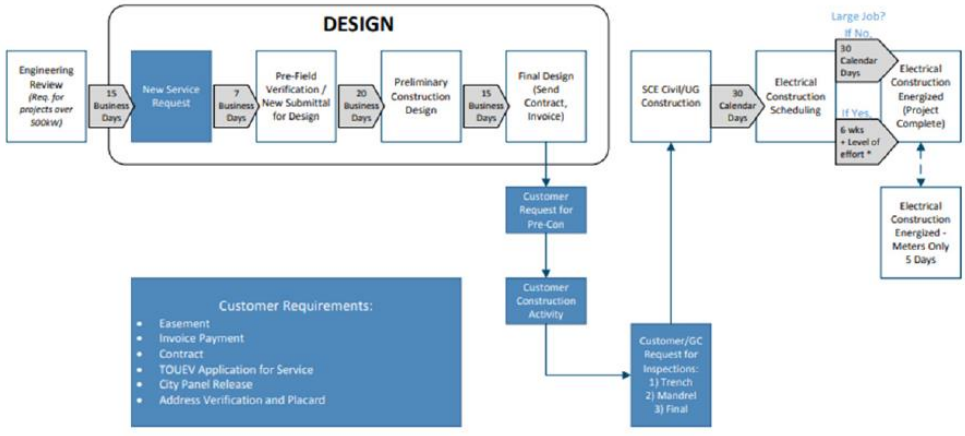
Not just time, but resources can be saved as well; when charging developers have the necessary means to investigate utility service themselves, utility engineering teams can focus their time accelerating construction and commissioning rather than responding to volumes of site assessment requests.

Finally, the grid can benefit from new thinking. Most DCFC developers have geographic preferences that are far more flexible than typical new service customers – they may be seeking new fast charging sites in a neighborhood or among a retail partner's locations across a region. Free flow of information on the infrastructure available across options could drive charging to under-used parts of the grid.

We're working with utilities to decrease time to revenue and staff demands by sharing information, committing to transparency and process, and leveraging existing resources. Here are the tools.

Document the Process.

Publish a process diagram that clearly identifies contractor responsibilities and required documents, deliverables and standards at each phase, with a timeline based on specific criteria.



Southern California Edison's publication of a simple and consistent process in early 2018 – pictured here – led SCE to cut its cycle time in half. At times, the utility has seen as much as six new fast charging stations opening in six weeks.

Optimize Use of Engineering Resources and Ensure A Level Playing Field with GIS Access.

GIS is the most powerful tool to enable efficient site assessment without use of utility resources. The most comprehensive systems, that show loading, quantity of meters, transformer data, and even photos of equipment, will let experienced applicants preserve utility engineering resources for only the execution phase of known viable projects. Of course, the utility must apply appropriate qualifications and security controls.

Reduce Time to Revenue with Realistic Timelines.

A best-case target timeline of 90 business day initial assessment to energization, has proven achievable in several jurisdictions. In Virginia, Dominion Energy has demonstrated the ability to routinely respond with detailed cost estimates and engineering specifications within two to three weeks of initial evaluation and application.

Drive Learning with Constructive, Detailed Feedback.

Even for nonviable sites, information on the "why" – the relevant equipment, limits, and remaining capacity of any nonviable sites enables both learning for future sites and potential redesign collaboration to remedy any faults at a single site.

Enable Network Planning Optimization with Transparent Interconnection Cost Detail.

Detailed interconnection cost estimates including the costs incurred by internal resources and the portions of the project that are covered by distribution allowances, should be provided to ensure that developers can optimize their designs against real world costs.

Accelerate your Best Customers with an Account Representative.

Large utility load accounts are often assigned a utility account representative, who uses their familiarity with the customer's business and processes to bridge and facilitate utility processes. Utilities should do the same for DCFC developers, owners and operators. Ensuring that these interactions benefit from learning, familiarity, accountability and efficiency reduces staff time and cost.

At High Application Levels, Maximize Throughput with A Dedicated Department.

For high-penetration utilities (e.g. those with more than ten DCFC requests a year), we recommend department – level support with dedicated DCFC staff who can carry out the following functions:

- Field analysis including in person, granular asset verification and evaluation.
- Planning and Engineering, including an Associate Distribution Engineer.
- Desktop review.
- Utility Inspection.

Increase Speed, and Push Assessment Costs to DCFC Developers by Expanding the Scope of Existing "Safe Access" Contractors.

The highest penetration utilities should train either the largest EVSE providers, or designated distribution contractors, on "safe access" certifications adequate to open and inspect items such as transformer enclosures. Third-party safe access certification is already common for utility distribution contractors; allowing these same parties the same access for EVSE site assessment would be a simple procedural change with dramatic timeline effects.