Instructions

This year's format is slightly different from last year. If you participated last year, you will remember that each case had one case partner and was written from their specific perspective. This resulted in solutions that were very useful to the case partner, but not necessarily replicable to other organizations. This year, many case partners were consulted to give a broader perspective on endemic energy efficiency implementation barriers. ***Accordingly, this year's cases describe "typical" versions of problems, and your solutions will be judged on innovation and replicability.***

Each case provides information that reflects the most common elements of the problem and some contextual assumptions. But in real life, every instance of a problem can be different. Therefore, you have two options for developing your solutions:

1) *You can select one or more real-world examples, and use the specifics of their situation to inform your solution OR*
2) *You can propose a general solution based on the assumptions provided in the case text and create additional assumptions as needed.*

Under either option, solutions will be judged for innovation and replicability. Therefore, if you choose to focus on a specific real-world example, you should indicate where aspects of your solution might be adapted or changed to be more broadly replicable.

In addition, any assumptions that you change or add must be clearly stated, and the sources cited in your case solution. If you use an example(s) that has different parameters than the assumptions in the case, of if your proposed solution requires changes to the case parameters, you must explain the impact of these differences on the solution's success or replicability.

Introduction

Although solar power has been in existence for decades, the industry is still nascent in many regions throughout the United States. Some regions have instituted regulations mandating utilities to broaden their generation mix to include solar, but even in these regions there are many obstacles to a flourishing solar industry including archaic regulations, unfamiliarity with the technology, and lack of infrastructure.

The Challenge

You are a Solar Acquisition Manager at Springfield Power & Light (SPL). SPL is an investor-owned, regulated utility company in the United States with service territory stretching across its home state.[1] The utility has been obligated by the state Public Utility Commission (PUC) to achieve an aggressive 18%[2] Renewable Portfolio Standard (RPS) requirement, including a solar carve-out of 4% of retail electric sales,[3] by 2023.[4] This RPS can be met by any combination of distributed generation, community owned, large, or utility-scale solar.

You have been selected to lead this new effort to expand solar energy within your utility's service territory, and to develop a program to satisfy the solar carve-out portion of the RPS, which must be approved by the PUC. Develop the most cost-effective[5] and sustainable strategy for satisfying the RPS solar carve-out. Your strategy may include but is not limited to: owning solar assets, leasing solar assets, or purchasing Solar Renewable Energy Credits (SRECs).[6] SPL would like to avoid paying the Alternative Compliance Payment (ACP) for each MWh produced using traditional fuel sources. The utility must be able to verify RPS compliance and provide reliable energy to the grid, so integrity of the source must be taken into account. Above all, the utility is obligated to provide reliable, affordable, and safe service to ratepayers. Any charge levied on the ratepayers through a Public Benefit Fund (if that is the chosen funding source of the solar program), must be fair and prudent.[7][8]

To support your program proposal, you must create a business plan for the utility with a strategy for development, implementation, and marketing. The program proposal must address all of the issues your program will influence including, but not limited to: changes in the rate case and rate structures, avoided generation/cost, stakeholder concerns (including large rate case interveners), financing mechanisms, financial return hurdles, and utility revenues.

Under your state's RPS regulation, energy efficiency is classified as a qualifying renewable electricity source. Your management has asked that you prioritize the exploration of incentivizing distributed solar generation, with installments greater than or equal to 50 kW, on commercially owned buildings within

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[1] References to SPL's home state in this document are not to any specific state, but rather to a theoretical state. Case teams may choose a state on which to base assumptions.

[2] Assume 8,000 GWh of retail sales

Changed to: Please assume a 3GW generating capacity for SPL. Also assume that retail sales include commercial, industrial, and residential sales.

[3] This excludes solar water heating.

[4] Keeping in mind project approval can take up to one year.

[5] Cost-effectiveness is based on the cost of Solar Renewable Energy Credit (SREC) purchases from neighboring states.

[6] Assume there is no solar credit multiplier; SREC prices are $200; ACP is set at $400.

[7] See https://www1.eere.energy.gov/manufacturing/states/pdfs/publicbenefitfunds.pdf.

[8] Where additional assumptions are required in the case, students are encouraged to make reasonable assumptions based on cited evidence.

your territory. SPL's energy efficiency team will be working with the commercially owned building sector to capture available energy savings through efficiency, so your proposal should integrate and complement these efforts. While photovoltaics (PV) are the focus of your proposal, integrating energy efficiency and alternative technologies such as storage may improve the value proposition or allow for project cost share. Your proposal should also explore ways to cut costs (including soft costs) in the application, permitting, and installation stages of PV projects, and outline the appropriate marketing and education materials for third-party solar developers and integrators.

The SPL Board of Directors is seeking a solar program that is scalable, offers a satisfactory financial return, and will help the company meet the state RPS. Due to the regulatory environment in the state, any program that is to be accepted by the Board must also be prepared for a rigorous evaluation from the PUC.[9] In the past, the PUC has positively reviewed program proposals that address its three main concerns as a regulatory authority: reliable service, affordability, and safety. If the proposed PV initiative can demonstrate its merits with regard to these issues and overall value to ratepayers, it will be looked upon favorably. Proposals received by the PUC will also be opened to the general public for input.

Setting

Prior to the mandate of your state's RPS, interconnection standards (including removing the prior cap) and net metering guidelines were established.[10] It was also established that the solar buyback rate matched the utility's site base rate and was not based on the avoided cost of generation. This buyback rate, known as the "full retail rate", includes generation, transmission and distribution, and surcharges. As a result, solar developers and financiers have started flocking to your state to expand their customer base, which is looked upon favorably by state and local government. New solar market entrants are optimistic about growth potential in the state, yet the State Energy Administration has yet to offer its own incentive program to further encourage new capacity growth beyond the existing Federal Investment Tax Credit.

Your state has average solar insolation,[11] [12] and current base electricity prices reflect the national average.[13] Unfortunately, on at least 35% of summer days, demand exceeds peak generating capacity from the hours of 12-5pm. The average demand on those days and times is 115% of generation capacity, forcing the utility to purchase expensive peaking capacity from a Regional Transmission Organization (RTO) outside of the territory at a 50% premium to meet demand in the load pockets. As a result, the state has instituted Locational Based Marginal Pricing (LBMP).

While SPL's service territory stretches across the entire state, most customers are clustered in urban areas[14]. These urban areas face complex challenges due to environmental and zoning laws that restrict

[9] As a guide, case proposals can follow the format outlined in the Appendix A resource, "Petition: Community Solar Gardens Program".
[10] For the purposes of this case, Arizona's interconnection and net metering guidelines may be used as a reference.
[11] Assumptions should be made, and stated, based on national averages.
[12] See https://openpv.nrel.gov/rankings.
[13] See http://www.eia.gov/electricity/monthly/epm_table_grapher.cfm?t=epmt_5_6_a.
[14] Students should describe the service territory in terms of number of customers and meters as well as size of metropolitan area as part of the basic assumptions. Dense population centers vs. rural service areas have very different and distinct considerations when it comes to resource planning.

the construction of new traditional generation plants to meet demand, so location-based marginal pricing exists to target supply and demand equilibrium at a more granular level than state-wide.

Despite the lack of a state solar incentive program, the policy and regulatory environment for SPL is ripe for solar market acceptance. Interconnection and net metering standards have been approved, the 30% Federal Investment Tax Credit will continue through 2016, and the new RPS rewards solar investors with RECs to satisfy the renewable energy mandate. Table 1 summarizes the current policy environment in the state. Some utilities in other states benefit from rate decoupling, however SPL is still under a system of volumetric pricing.

Table 1: Status of Applicable Policies

Policy	Status
Net metering	Approved
Interconnection	Approved
Renewable Portfolio Standard	Approved with Solar Carve-Out
Utility Pricing	Volumetric
Utility Structure	Regulated
Location Based Marginal Pricing	Approved
State Solar Incentive Program	None
Virtual Net metering	Approved
Third party ownership	Allowed

Resources

- Ryan Tracy, "Solar-Regulation Tiffs Flare Across States: Fight Brewing in Louisiana Between Entergy, NRG Over Payments Could Lead to Less Investment in Renewables," *Wall Street Journal,* May 29, 2013
- Ryan Tracy, "State Utility Regulators Back Solar-Power Users," *Wall Street Journal,* July 9, 2013
- Ryan Tracy, "Utilities Weigh a Turn to the Sun," *Wall Street Journal,* May 29, 2013, p B3.
- Michael Puttre, "Arizona Clash Over Solar Charges Heralds Coming Net Metering Battle," *Solar Industry Magazine*
- Russel Gold, "Solar Groups Seek Tea-Party Support: Renewable-Energy Firms Seek Conservative Backing as Utilities Seek to Trim Price They Pay Homeowners," *Wall Street Journal,* July 2, 2013
- Jim Lazar, "Electricity Regulation in the U.S.: A Guide from the Regulatory Assistance Project"
- Jim Lazar and Ken Colburn, "Recognizing the Full Value of Energy Efficiency"
- "Freeing the Grid 2013, Best Practices in State Net Metering Policies and Interconnection Procedures"
- Database of State Incentives for Renewables & Efficiency
- Solar Enegy Industries Association
- Utility Rate Database (URDB)
    - How to use the URDB: Using the System Advisor Model with the URDB enables users to perform economic analyses of energy systems. "The Impacts of Utility Rates and Building Type on the Economics of Commercial Photovoltaic Systems" evaluates solar value for different rate structures across the United States. The results of this study may be found at "Impact of Utility Rates on PV Economics - Digital Appendix."
- Webinar: "The Treatment of Solar in Utility Resource Planning." Solar Electric Power Association. See PDF slides
- White Paper: "Market Segmentation and Energy Efficiency Program Design." California Institute for Energy and Environment.
- 2014 Renewable Energy Standard Plan. Public Service Company of Colorado
- Petition: Community Solar Gardens Program. Minnesota Public Utility Commission
- SEIA Utility Revenue Decoupling