

The Itron logo consists of the word "Itron" in a white, sans-serif font, with a small yellow lightning bolt symbol above the letter "o". It is set against a red rectangular background.

Itron

The background of the slide is a wide-angle photograph of a large solar panel array on a flat roof. The panels are blue with silver grid lines, and the sun is setting in the distance, creating a warm, golden glow across the sky and reflecting off the panels. Mountains and some buildings are visible in the background under a cloudy sky.

NEM 2.0 Evaluation

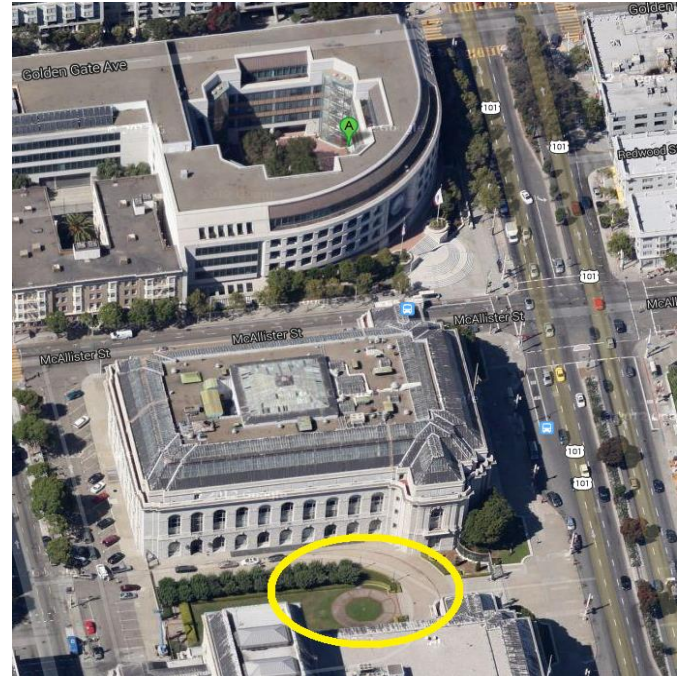
Draft Research Plan Presentation

December 6, 2019

SAFETY AND EMERGENCY INFORMATION



In the event of an emergency evacuation, please cross McAllister Street, and gather in the Opera House courtyard down Van Ness, across from City Hall.





ADDITIONAL INFORMATION

Wi-Fi Access

Network: cpucguest

Username: guest

Password: cpuc112719

Restrooms

- 1) Through the courtyard, right into the lobby, and left through the double-doors
- 2) Through the courtyard, left into the auditorium, and to the right



AGENDA OVERVIEW

10:00am – 10:10am

Welcome, Safety, Introductions, Objectives, Scope | Energy Division Staff

10:10am – 10:40am

Presentation on NEM 2.0 Evaluation Draft Research Plan | Itron

10:40am – 12:20pm

Stakeholder Feedback and Questions | Facilitated by Energy Division Staff and Itron

12:20pm – 12:30pm

Closing and Next Steps | Energy Division Staff

ABOUT THE NEM 2.0 EVALUATION

Scope and purpose

- » Itron will perform a backwards looking cost-effectiveness evaluation of PG&E, SCE, and SDG&E's "NEM 2.0" tariffs

- » The analysis will look at a snapshot of NEM 2.0 customers as of the end of 2019 and evaluate the costs and benefits of DERs taking service under NEM 2.0 tariffs

- » Two analyses will be conducted:
 - Cost-effectiveness of DERs analysis consistent with the CPUC standard practice manual and avoided cost calculator
 - Cost of service analysis comparing DER bill reductions with utility cost of service

ABOUT THE NEM 2.0 EVALUATION

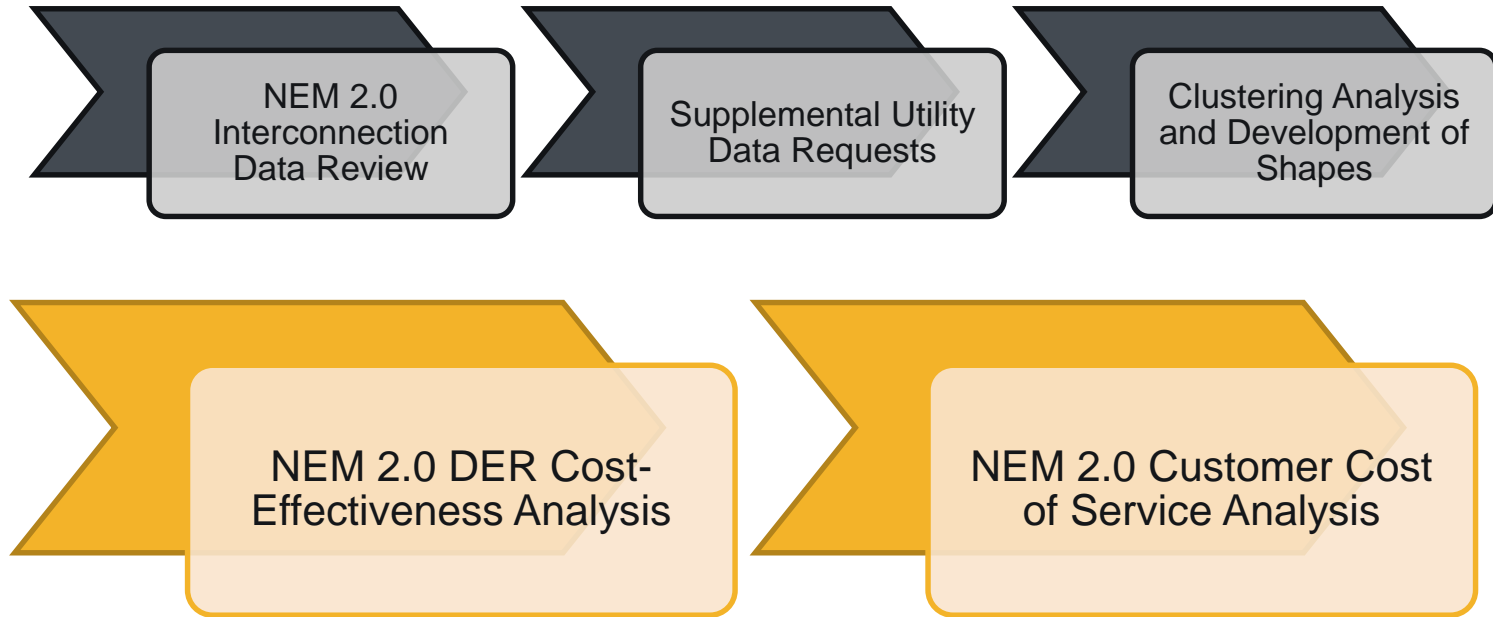
Technologies

- » Solar photovoltaic (PV), battery energy storage, fuel cells, and distributed wind systems are eligible for NEM 2.0 tariffs and therefore in scope for analysis
- » The level of rigor in the analysis will be proportional to the penetration of these technologies by the end of 2019
 - We expect to spend a greater portion of the analysis time on residential solar PV and battery storage technologies



ABOUT NEM 2.0 EVALUATION

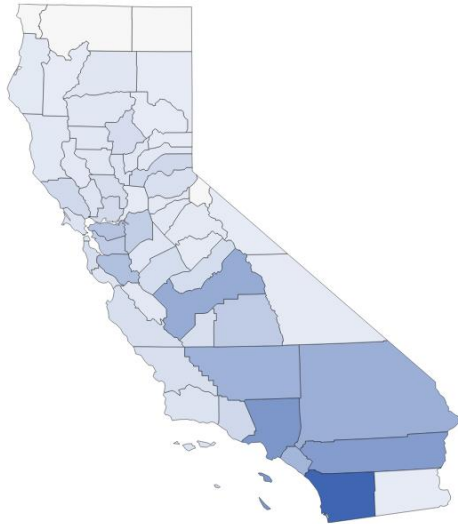
Summary of Approach



Initial Activities

Define the NEM 2.0 Population

DEFINING THE NEM 2.0 POPULATION



Capacity (MW)

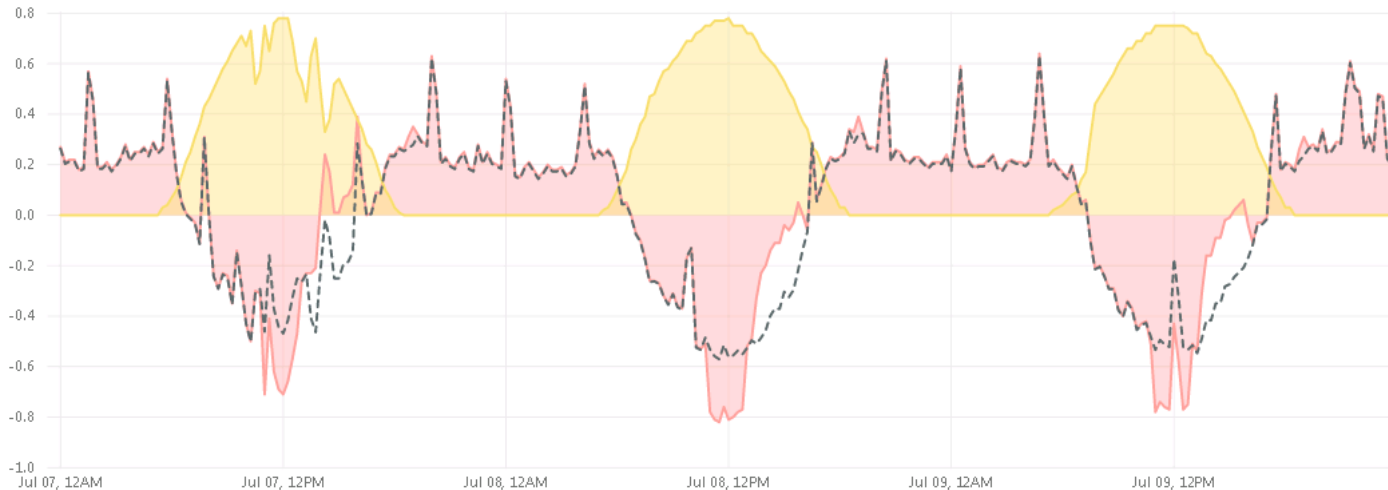


- » Review NEM Currently Interconnected Dataset on California DG Statistics
- » Submit data requests to PG&E, SCE, and SDG&E for interconnection and customer load/billing data
- » Establish relationship between interconnection data and load/billing data



DEFINING THE NEM 2.0 POPULATION

- » Collect utility AMI/billing data from NEM 2.0 customers
- » Use metered or simulated generation data to develop gross load shape



DEFINING THE NEM 2.0 POPULATION

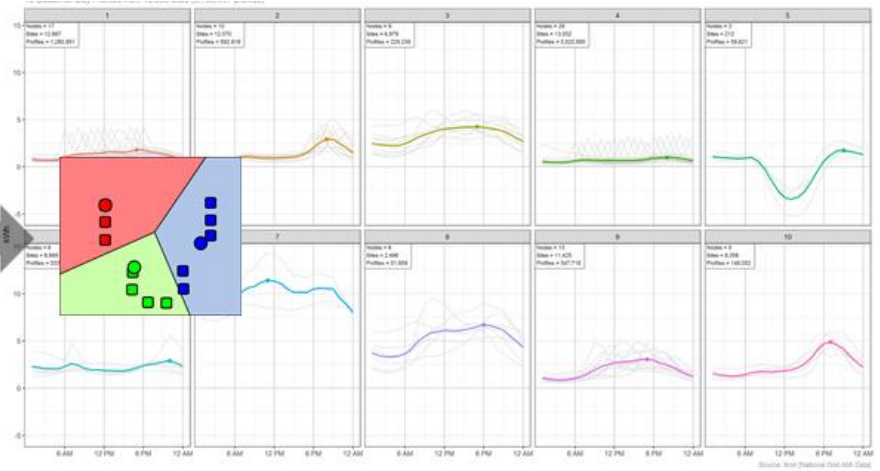
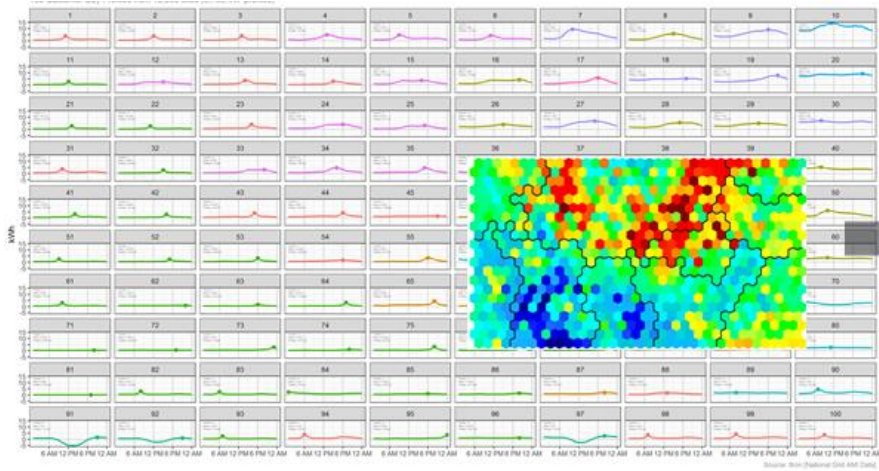
- » Solar simulations driven by PVLIB toolbox which runs the Sandia and PV Watts performance models
 - Incorporating lessons learned from forthcoming 2011 – 2017 CSI evaluation
 - Using actual or TMY weather

- » Data from SGIP energy storage, fuel cell, and distributed wind projects will be used to develop gross load shapes



CLUSTERING ANALYSIS

Creating representative customer shapes



Cost-Effectiveness Analysis

COST-EFFECTIVENESS OF DER PROGRAMS

D. 19-05-019 and the Standard Practice Manual

“...the Total Resource Cost (TRC) test shall be considered the primary test of cost-effectiveness for all distributed energy resources ... we also recognize the importance of considering the results of the Program Administrator Cost (PAC), and Ratepayer Impact Measure (RIM) cost-effectiveness tests and, thus, require discussion of those considerations in all relevant proceedings.”

ALJ/KHY/ilz

Date of Issuance: 5/21/2019

Decision 19-05-019 May 16, 2019

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Create a Consistent Regulatory Framework for the Guidance, Planning, and Evaluation of Integrated Distributed Energy Resources

Rulemaking 14-10-003

DECISION ADOPTING COST-EFFECTIVENESS ANALYSIS FRAMEWORK POLICIES FOR ALL DISTRIBUTED ENERGY RESOURCES

CALIFORNIA STANDARD PRACTICE MANUAL

ECONOMIC ANALYSIS OF DEMAND-SIDE PROGRAMS AND PROJECTS

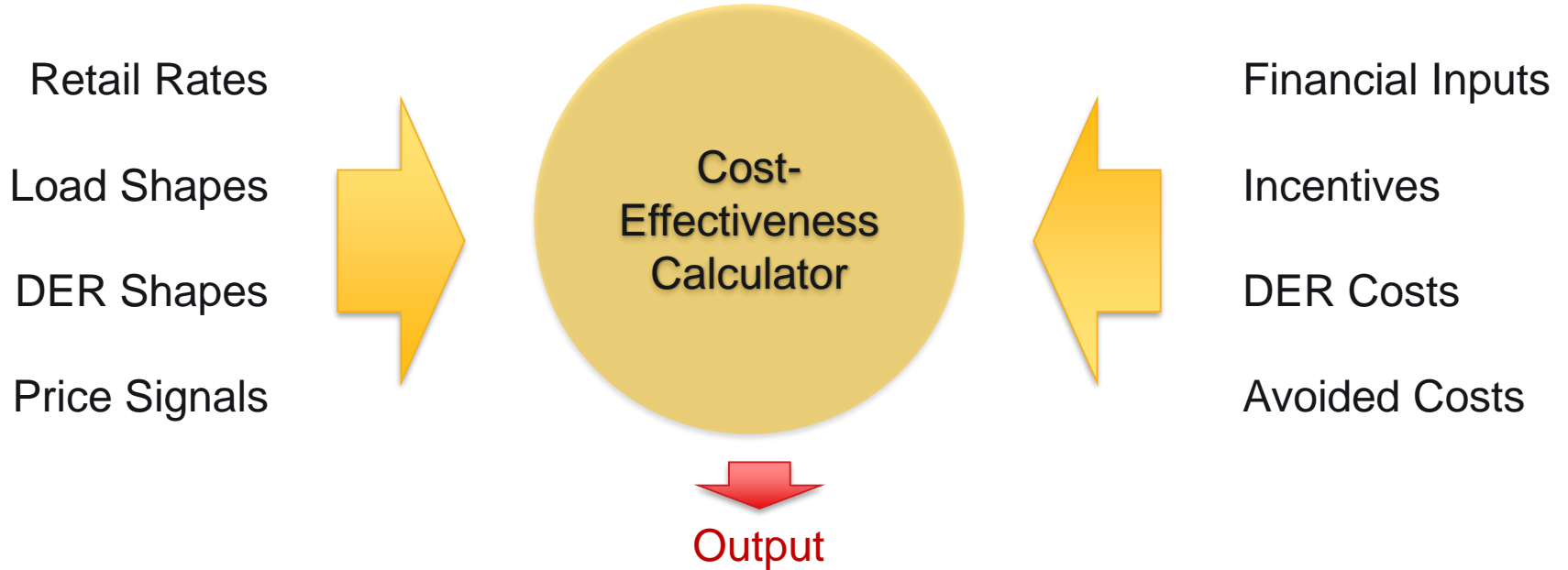
STANDARD PRACTICE MANUAL TESTS

- » **TRC:** measures the net costs of a program as a resource option based on the total costs of the program, including both the participants' and the utility's costs.
- » **PA:** measures the net costs of a program as a resource option based on the costs incurred by the PA and excluding any net costs incurred by participants.
- » **RIM:** measures what happens to customer bills or rates due to changes in utility revenues and operating costs caused by the program.
- » **Participant:** measures the quantifiable benefits and costs to the customer due to participation in the program.

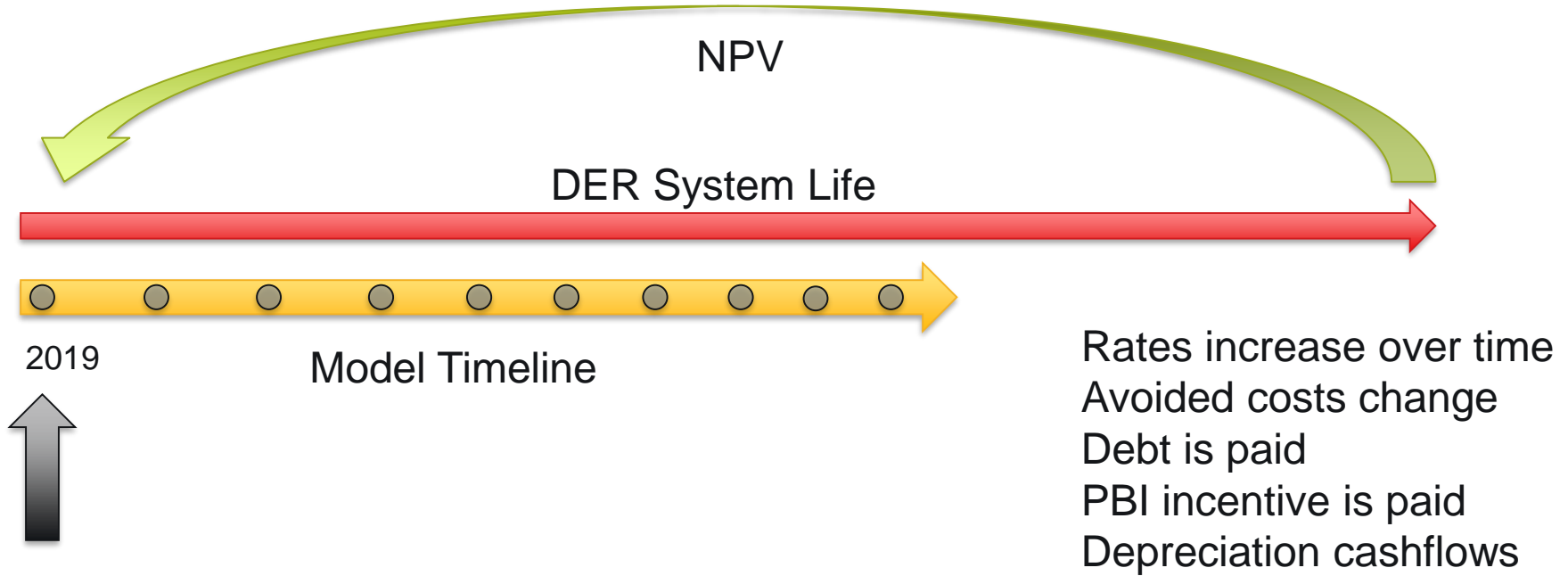
ABOUT ITRON'S DER C-E MODEL

Key Inputs

- » Financial model that quantifies that costs and benefits associated with DER technologies



COST-EFFECTIVENESS FRAMEWORK



KEY INPUTS

- » **Retail rates** will be based on actual utility data – rate increases are based on the CEC forecasts
- » **DER shapes** are based on simulations or actual metered data depending on availability.
 - PV simulations will be created based on TMY Weather and the PV Watts model
 - Storage simulations will reflect the limitations of actual dispatch, not ideal dispatch
- » We will model incentives like the **Federal ITC, SGIP, SOMAH**, or others as applicable

KEY INPUTS

Cont.

- » **Avoided costs** will be taken from the most recent publicly available version of the CPUC Avoided Cost Calculator

- » **DER costs** will be based on publicly available sources, including:
 - LBNL Tracking The Sun Report (PV Only)
 - Incentive program application datasets
 - Publicly available industry reports (e.g., Lazard cost of storage)

- » Other assumptions like **inflation, cost of capital, and discount rates** will be consistent with other CPUC proceedings and public tools

KEY INPUTS

Cont.

- » Itron will work with utilities to acquire program costs associated with implementing the NEM 2.0 tariff, including:
 - Incremental costs of setting up a NEM 2.0 billing account
 - One-time incremental metering costs
 - Utility interconnection costs

- » Itron will also request data on other integration costs associated with NEM 2.0

Cost of Service Analysis

COST OF SERVICE ANALYSIS



- » Cost of service analysis compares the utility cost of servicing NEM 2.0 customers with their bills
- » Itron will work closely with PG&E, SCE, and SDG&E to leverage information from their General Rate Cases (GRC), regulatory costs, and NEM customer incremental costs
- » Data from GRCs will be used to reproduce cost to serve customers and compared to NEM bills

Project Timeline and Initial Questions

PROJECT TIMELINE

- » **December 6, 2019** – public workshop on draft research plan
- » **December 20, 2019** – informal comments due on draft research plan
- » **January 2020** – CPUC ED and Itron respond to comments on draft research plan
- » **January to February 2020** – Director of CPUC ED approves final research plan through letter to NEM service list
- » **TBD before June 30, 2020** – Draft NEM 2.0 evaluation report and workshop
- » **On or after June 30, 2020** – Final report and webinar on final report

INITIAL QUESTIONS FOR STAKEHOLDER COMMENT

- » What key characteristics should be used to form groupings, or bins, of customers?
- » What customer segments or demographics are important to examine in the cost-effectiveness analysis?
- » What are reliable source of data for installed DER costs?
- » Should PVLIB (which implements NREL's PV Watts DC Power Model) be used to develop solar profiles?

INITIAL QUESTIONS FOR STAKEHOLDER COMMENT

- » Besides grid upgrade costs, are there other integration costs that should be considered in the cost-effectiveness analysis?
- » What scenarios should be included in the cost of service analysis?

Next Steps

Comments and stakeholder feedback

THANK YOU



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