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# Distribution Resources Plan OIR

August 5, 2015





- Please submit questions via the “chat” feature of the webinar.
- Would media or financial institution representatives please contact SDG&E to ensure a clear understanding of the topics discussed before publishing an article or report.
- Would any decision makers, as defined by Rule 8.1(b) of the CPUC’s Rules of Practice and Procedure, and any Commissioners’ personal advisors attending this webinar, to please notify Jonathan Newlander at [jnewlander@semprautilities.com](mailto:jnewlander@semprautilities.com) and Dave Erickson at [john.erickson@cpuc.ca.gov](mailto:john.erickson@cpuc.ca.gov).

# Agenda



- 2:00 p.m. – 2:10 p.m.**                      **Welcome and Introduction**  
**Webinar logistics and objective**  
**SDG&E's Policy and Vision**
- 2:10 p.m. – 2:35 p.m.**                      **Section 1a: Integration Capacity Analysis**  
**Section 1b: Optimal Location Benefit Methodology**  
**Section 1c: DER Growth Scenarios**
- 2:35 a.m. – 2:45 p.m.**                      **Q&A**
- 2:45 p.m. – 3:10 p.m.**                      **Section 2: Demonstration Projects**  
**Section 3: Data Access**  
**Section 4: Tariffs and Contracts**  
**Section 5: Safety**
- 3:10 p.m. – 3:20 p.m.**                      **Q&A**
- 3:20 p.m. – 3:50 p.m.**                      **Section 6: Barriers to Deployment**  
**Section 7: DRP Coordination with General Rate Case**  
**Section 8: DRP Coordination with Utility and CEC Load Forecasting**  
**Section 9: Next Steps**
- 3:50 p.m. – 4:00 p.m.**                      **Q&A, wrap-up**

# Objective



- The objective of this webinar, which is being recorded and will be posted on the CPUC's DRP website along with the presentation material, is to provide a forum to aide CPUC staffs' and stakeholders' understanding of SDG&E's DRP. The material and discussions will focus solely on information that is already contained in our DRP Application.

# Policy and Vision



- Ensure Safety, Reliability and Customer Value
  - Ensure public and employee safety
  - Enhance customer reliability
  - Optimize use of the existing grid that enhances customer value
- Universal Service for all customers utilizing the grid as a platform
  - Facilitate 'Plug & Play' growth of DERs
  - Provide access to cost effective DERs
  - Provide proper capacity related DER solutions
- Rational Rate Structure
  - Rates that are based on cost of service
  - Rates that are transparent and fair
  - Rates that avoid cost shifts

# Distribution Resource Plan

## What it does...what it doesn't



- **Within Scope of DRP**
  - Determine system capacity to integrate DERs
  - Determine methodology for locational values of DERs
  - Forecast growth of DERs and demonstrate projects
  - Identify issues surrounding safety, data, and tariffs that can help or hinder DER development
- **Outside Scope of DRP**
  - How to solicit DERs to provided identified benefits
  - Ownership of DERs; Operation of DERs
  - Mechanism to develop Rates and Incentives to attract DER where needed
  - IOU Cost Recovery
  - Addressing DER installing where no/negative benefits

# Discussion Session 1



- Section 1a: Integration Capacity
- Section 1b: Optimal Locations
- Section 1c: DER Growth Scenarios

# Integration Capacity – Optimal Locations Benefit Analysis

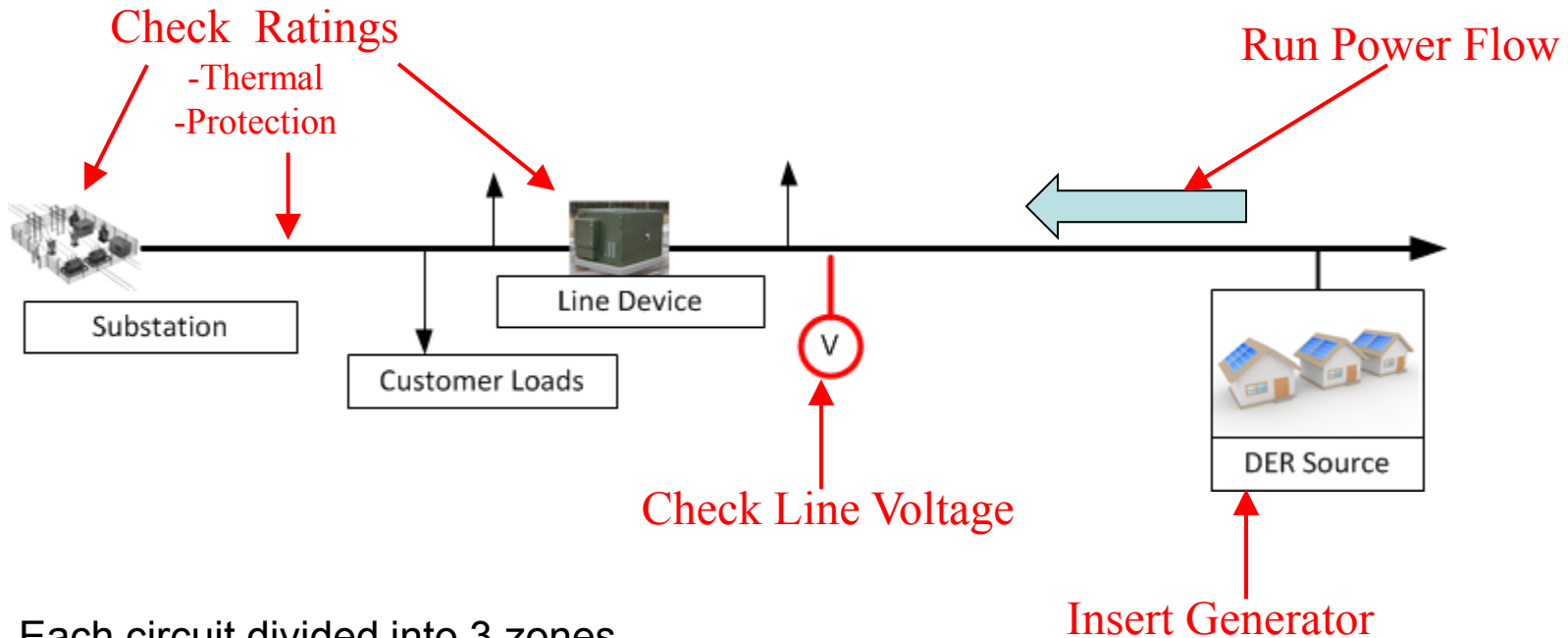


- Integration Capacity - Identify maximum amount of DER per line section based on thermal, voltage and protection limits
  - SDG&E is in the process of upgrading planning tools
  - Integral Analytics (LoadSEER) performed a 10yr analysis in parallel
- Optimal Locations – Identify methodology for determining location benefits of DER via several criteria:
  - Capital project deferral or avoidance
  - Investment to accommodate DER is cost effective, or
  - Required investment benefits customers as well as DER
- Optimal locations depend on:
  - System need (circuit/substation capacity, voltage support, etc.)
  - System capacity, i.e., how much DER can the location accommodate?
- SDG&E to provide updated Renewable Auction Mechanism (RAM) maps with optimal circuits/substations identified





# 1a: Integration Capacity Analysis

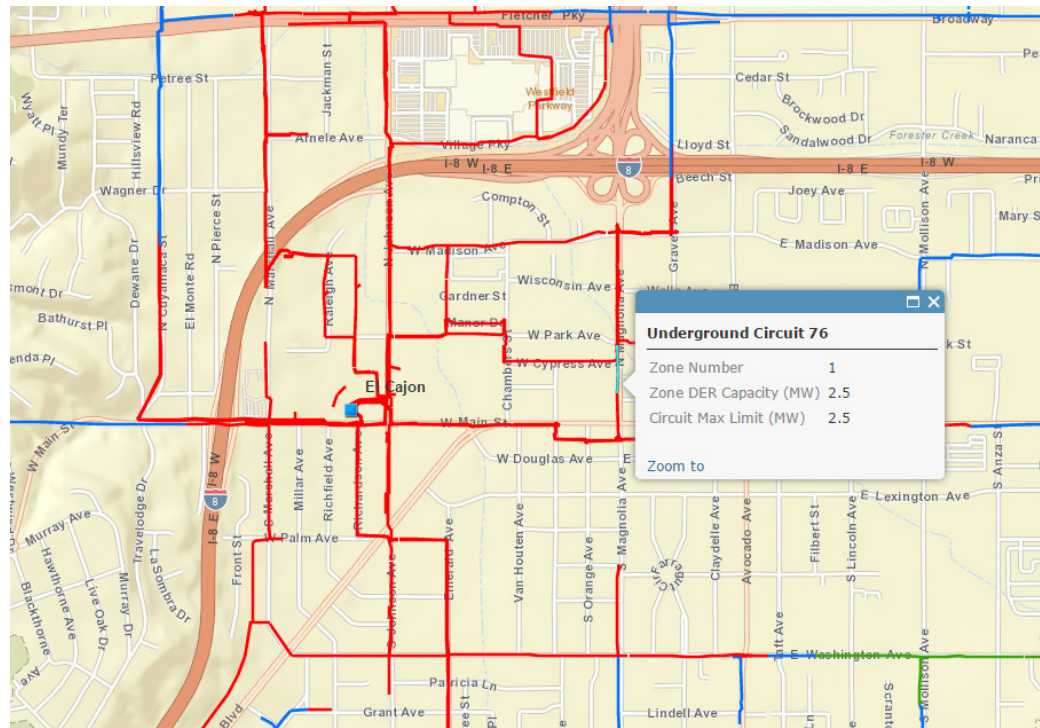


- Each circuit divided into 3 zones
- Max-sized generator placed at far end of each zone, run power flow
- Check for limit violations
  - Voltage: Is voltage above/below thresholds? Do fluctuations exceed 3%?
  - Thermal: Are equipment/conductor ratings exceeded?
  - Protection: Is fault current below interrupting ratings?
- If screens pass, move on to next zone, if fail, reduce generator size and rerun

# 1a: Integration Capacity Analysis - Results



- RAM Maps updated with ICA results by section
- Maps updated as new results become available
- Colored by zone, not capacity



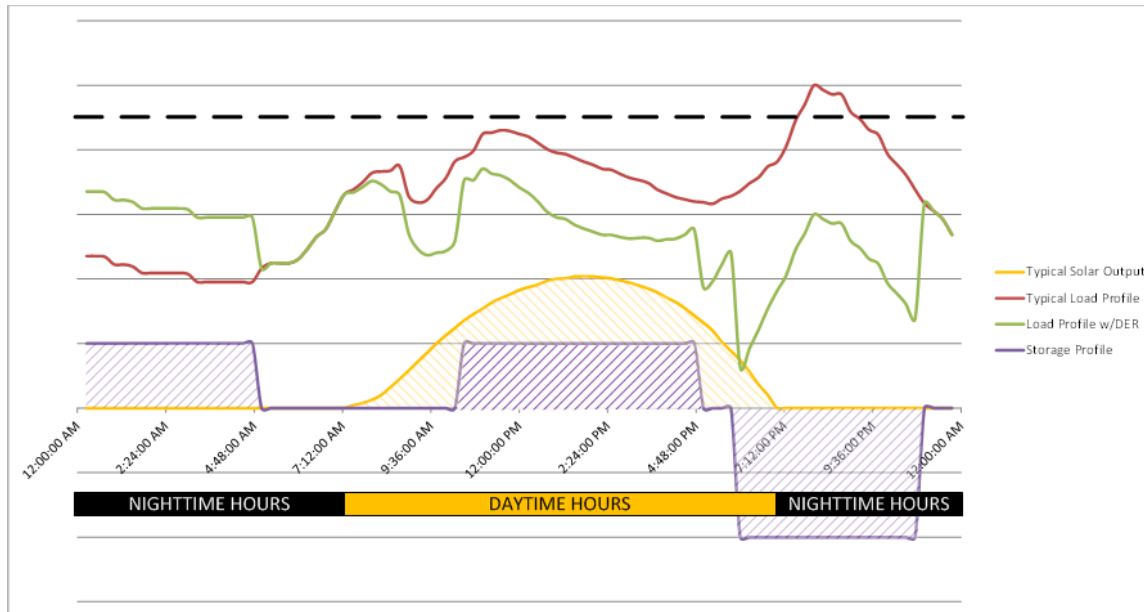
- 342 Circuits complete to date
- Identified 618MW of capacity System wide
- Initial IC expected to exceed 1000MW



# 1a: Integration Capacity Analysis – Next Steps



- Fully integrate 24/7 load profiles
- Assess reverse flow
- Incorporate technology profiles
  - EV
  - Storage
  - PV



# 1b: Locational Values Replace DERAC System Values



| Component                  | Locational Value   |
|----------------------------|--|
| <b>Generation Energy</b>   | Generation Energy replaced with DLAP   |
| <b>Losses</b>              | Distribution loss factors  |
| <b>Generation Capacity</b> | Local Capacity Requirements (LCR) for Resource Adequacy  |
| <b>Ancillary Services</b>  | Percentage of generation energy value  |
| <b>T&amp;D Capacity</b>    | Avoided Sub-Transmission, Substation and Feeder Capital and Operating Expenditures<br>Avoided Distribution Voltage and Power Quality Capital and Operating Expenditures<br>Avoided Distribution Reliability and Resiliency Capital and Operating Expenditures<br>Avoided Transmission Capital and Operating Expenditures |
| <b>Environment</b>         | Qualitatively describe the Societal Avoided Costs by using the CalEnviro Screening tool  |
| <b>Avoided RPS</b>         | Cost of a marginal renewable resource less the energy market and capacity value associated with that resource  |

## 1b: Locational Net Benefits Analysis

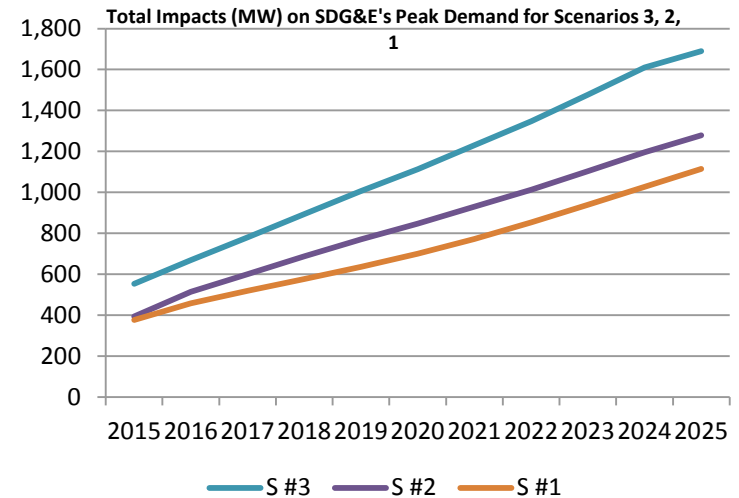


- SDG&E will compare the net cost of the DER solution to the cost of the traditional upgrade to determine the cost effective solution
  - **\$DER Benefit** =  $\$Cap_{cost} + \$O\&M_{cost} - \$NetDER_{cost} - \$DER_{integration_{cost}}$
- The DER project will need to realize additional value, such as contributing to resource adequacy requirements, avoided RPS, and environmental and societal benefits through appropriate processes

# 1c: Growth Scenarios



- SDG&E created 3 scenarios per the final guidance
  - Scenario 1: Base DER Growth=> 2014 IEPR “Trajectory” Case
  - Scenario 2: High DER Growth=>2015 SDG&E IEPR Forecast
  - Scenario 3: Very High Growth=> Scenario 2 with high EE/DR
- Scenario 1 uses the IEPR trajectory case without modifications
- Scenarios 2 & 3 represent SDG&E’s best assessment of high and very high DER growth
- SDG&E looked for balance between electric prices and DER adoption in scenario 3



## 1c: Growth Scenarios - Allocation



- DER impacts are allocated depending upon resource
  - PV, EV, and ES distributed evenly across all circuits
  - EE allocated based on a 20 – 80 coastal - inland split
  - CoGen allocation assumes circuits with existing CoGen will absorb new installations
  - DR is presumed to occur in Coastal zone
- Based on adoption and weather patterns
- Once approved by the Commission, the growth scenarios will be utilized for planning purposes



## Q&A Session on Sections 1a – 1c

- Please send us your questions regarding integration capacity, optimal location benefit analysis, and DER growth scenarios through the webinar “chat” feature to the facilitator (Joe McCawley) and we’ll address as many as time allows.





- Section 2: Demonstration / Pilot Projects
- Section 3: Data Access
- Section 4: Tariffs and Contracts
- Section 5: Safety Concerns

## 2: Demonstration Projects



- SDG&E described the five required demonstration projects, and one optional project
  - ICA Demonstration
  - LNBM Demonstration
  - Demonstrate DER benefits
  - Demonstrate operations at high DER penetrations
  - Demonstrate DER dispatch for reliability
  - Optional: Demonstrate customer-side storage solution
- SDG&E will select locations for demonstrations after approval of its DRP

### 3: Data Access – Overview



- Data gathered by SDG&E is subject to customer privacy, physical and cyber security measures
- SDG&E places safety and reliability of the distribution system at forefront when considering data sharing policies
- SDG&E believes some data can be shared broadly without restriction
- SDG&E believes certain data requires a verification process before sharing with individual parties
- SDG&E may not currently collect all data desired by DERs

### 3: Data Access – Proposed Data Access Methods



SDG&E proposes to provide data through a number of methods:

- Some data is being made available through DRP process
  - Updated RAM Maps
- Utilize existing processes where data is already being provided
- Provide additional data that is currently non-public after verification
- Utilize PRG-type process to provide non-market participants a way to receive market-sensitive information

# 3: Data Access – Third Parties to Utilities



## Beneficial data types

- Operations - Voltage, current, power factor, real and reactive power, and status of DERs
- Planning – Historical Output profiles
- Data will be used to maximize DER benefits to the grid, and identify safety concerns

## 4: Tariffs and Contracts



- SDG&E identified existing Tariffs and Rules that govern and/or incent different types of DERs:
  - Distributed renewable generators (e.g. NEM, ReMAT, Rule 21)
  - Demand Response (e.g. DR-SES, Summer Saver Program)
  - Electric Vehicles (e.g. PEV-TOU, PEV-TOU-2),
- To the extent DRP analysis could be incorporated into the existing tariffs (including any policy reforms to Rule 21), SDG&E believes such new tariff provisions should be developed in the tariff's existing, active proceeding (as possible and appropriate) rather than in the DRP proceeding.



## 4: Rates and Tariffs



- Rate Reform is key to efficient DER integration
- SDG&E believes no new tariffs are needed at this time
- Rule 21 modifications should be pursued in the Rule 21 proceeding regarding the applicability of ICA to the Rule 21 Fast Track process
- Modifications to rules 15 and 16 should be explored where applicable

## 5: Safety Considerations



- Final Guidance required SDG&E to identify reliability and safety standards related to DERs, as DERs bring new safety challenges to the distribution system
- In its DRP, SDG&E identifies existing safety standards regarding equipment design and operation to ensure a safe and reliable distribution grid
- DERs should meet the same electric system standards for safety and reliability as utility equipment
- Education of First Responders about the characteristics of DERs is key to successful emergency response







### Q&A Session on Sections 2 - 5

- Please send us your questions regarding demonstration projects, data access, tariffs, and safety considerations through the webinar “chat” feature to the facilitator (Joe McCawley) and we’ll address as many as time allows.



- Section 6: Barriers to Deployment
- Section 7: DRP Coordination with GRCs
- Section 8: DRP Coordination with Utility and CEC Load Forecasting
- Section 9: Phasing of Next Steps

## 6: Barriers to Deployment



SDG&E identified several barriers to widespread DER deployment. Examples include:

### Regulatory

- Cost Based Rates

### Grid Insight

- Complete picture of real time state of Grid

### Operations

- T & D interaction

### Technology

- Planning tool updates



## 7: DPP-DRP-GRC Coordination



- SDG&E will identify three types of distribution projects
  - Projects to enable increased DER deployment – Control and monitoring equipment, grid modernization
  - Traditional Distribution Capacity projects that can be deferred/replaced by DER – Circuits/substations
  - Traditional projects that cannot be replaced by DER – Pole replacements, maintenance, safety, monitoring equipment, reliability, billing, metering, customer service
- SDG&E will recover all costs associated with the DRP through the appropriate GRC
  - SDG&E opens memo account to track costs for Demonstration and Deployment Projects
  - SDG&E opens memo accounts to track costs for utility investments to integrate DER – comm/control



## 8: DRP Coordination with Forecasting



- Existing forums and processes should continue to be used
  - LTPP
  - IEPR
  - DPP
- Each forecast will require modifications for DER forecasts and capacity values
- Updated each forecast cycle

# 9: Annual DPP Incorporates DRP Guidance



- Utilities complete annual Distribution Planning Process (DPP) with improvements specified in DRP
  - Integration Capacity and Benefits Analysis
  - Improved DER forecasts based on different adoption levels
  - Improved planning tools and analysis
- DPP identifies “grid” needs and the following types of investments in traditional infrastructure
  - Projects needed to facilitate DER development and operation
    - Utility investment in new infrastructure, enabling technology (Comm/Control)
  - Projects where DER could possibly defer/replace traditional infrastructure
    - Capacity jobs – New substations/circuits
    - Power Quality, Reliability



## Q&A Session on Sections 6 - 9

- Please send us your questions regarding Barriers to Deployment, DRP Coordination with GRCs, DRP Coordination with Utility and CEC Load Forecasting and Phasing of Next Steps through the webinar “chat” feature to the facilitator (Joe McCawley) and we’ll address as many as time allows.

# Conclusion



- **SDG&E's DRP Governing Principles**
  - Ensure Safety, Reliability and Customer Value
  - Universal Service for all customers utilizing the grid as a platform
  - Rational Rate Structure
- SDG&E supports the state's GHG reduction goals and views the DRP as an important element
- As requested, SDG&E's DRP identified the following:
  - 1000MW of potential Integration Capacity
  - A Locational Net Benefits Methodology
  - DER Growth Scenarios
  - Demonstration and Deployment projects
  - DER enabling grid investments