



Where Might We Be Headed? Signposts from Other States

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WIDRC Interconnection Forum for Distributed Generation

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Message #1: Wisconsin is Doing a Lot of Things Right

- WIDRC itself
- PSC 119, in particular:
 - Designated points of contact
 - Expedited process for smaller systems
 - Clear timelines for specific phases
 - Clarity on fees and review/study costs

Message #2: Current Concerns Are Not Insurmountable

Concerns mentioned in WIDRC surveys

Both installers and utilities:

1. Paperwork in application submission and processing can produce delays and headaches on both sides

Additional installer concern:

2. Lack of visibility into local distribution system can result in lengthy/costly studies and upgrades

Other issues:

3. Uncertainty in upgrade costs
4. Performance relative to PSC 119 timelines

Concern #1: Application Submission/Processing

- Option: off-the-shelf software



Visualize Workflows Automate Communications Configure Custom Forms **Eliminate Paper** Calculate Incentives

The screenshot displays the PowerClerk web interface. On the left, a document titled "Adopt Your Signature" is shown, with a signature of "Scott Tavel" and a date of "11/11/2015". The main area shows a form for "Agreements and Supporting Documentation" for Project Number: 00529. The form includes fields for Administrator Title (Operations Manager), Administrator Name (Scott), Administrator Email (scott@nveenergy.com), and a Yes/No selection for "Yes Making Agreement". A "Save" button is visible at the bottom right of the form.

ELIMINATE PAPER

Create templates that automatically generate documents (i.e., agreements) based on application-specific information. Route approved documents for secure eSignatures.

Used by:

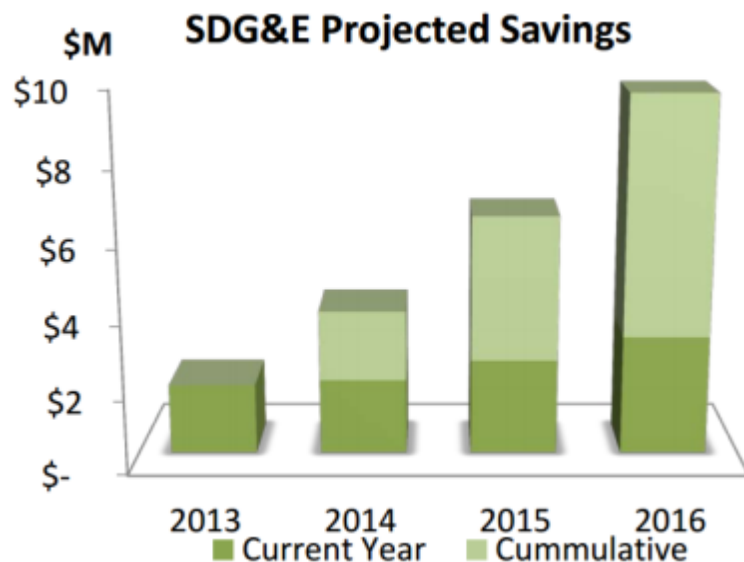
The logos for three utility companies: NV Energy (red triangle logo), Consumers Energy (green and blue logo with the tagline "Count on Us"), and SRP (blue logo with a sunburst design).

Concern #1: Application Submission/Processing

- Option: off-the-shelf software
- Option: custom software

San Diego Gas and Electric:

Apps/month rose from 300 to 1,200
\$2.1M (18,000 hours) to develop
\$2.3M in year-one savings



Pacific Gas and Electric:

Apps/month rose from 1,000 to 6,000
\$1.5M to develop
\$25.8M in savings over three years



Figure 5: Annual Cost Savings from Standard NEM Process Improvements

Source: https://www.nrel.gov/dgic/assets/pdfs/2014-04-02_innovation-in-the-interconnection-application-process.pdf

Source: <http://www.nrel.gov/docs/fy15osti/65066.pdf>

Concern #2: Lack of Visibility into Distribution System

- Option: pre-application reporting

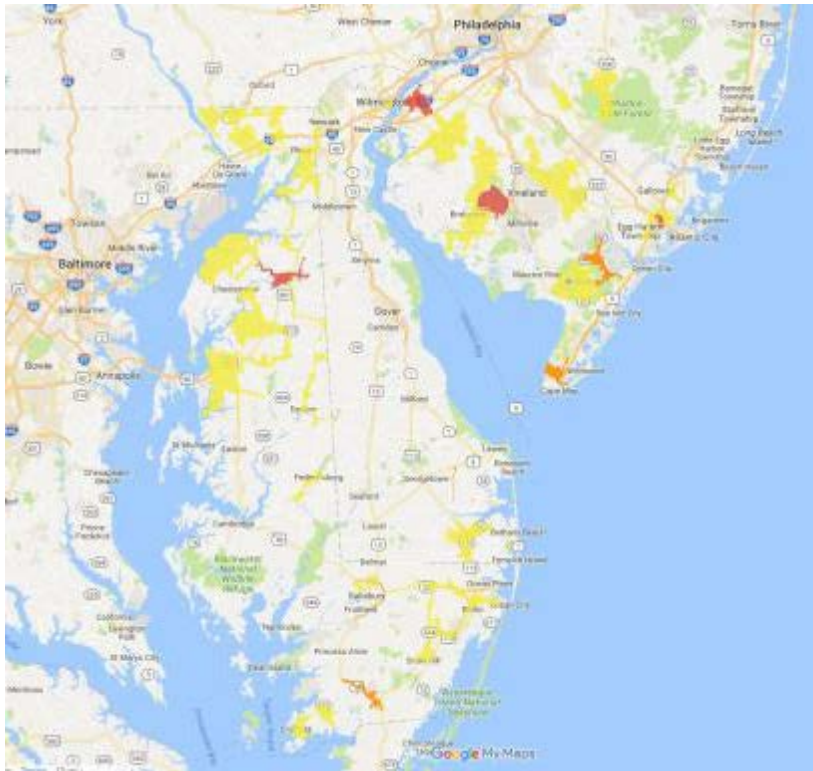
Example: New York Pre-Application Report Contents

Pre-Application Report: (Provided to Applicant by Utility – 10 Business Days)
Operating voltage of closest distribution line
Phasing at site
Approximate distance to 3-Phase (if only 1 or 2 phases nearby)
Circuit capacity (MW)
Fault current availability, if readily obtained
Circuit peak load for the previous calendar year
Circuit minimum load for the previous calendar year
Approximate distance (miles) between serving substation and project site
Number of substation banks
Total substation bank capacity (MW)
Total substation peak load (MW)
Aggregate existing distributed generation on the circuit (kW)
Aggregate queued distributed generation on the circuit (kW)

Concern #2: Lack of Visibility into Distribution System

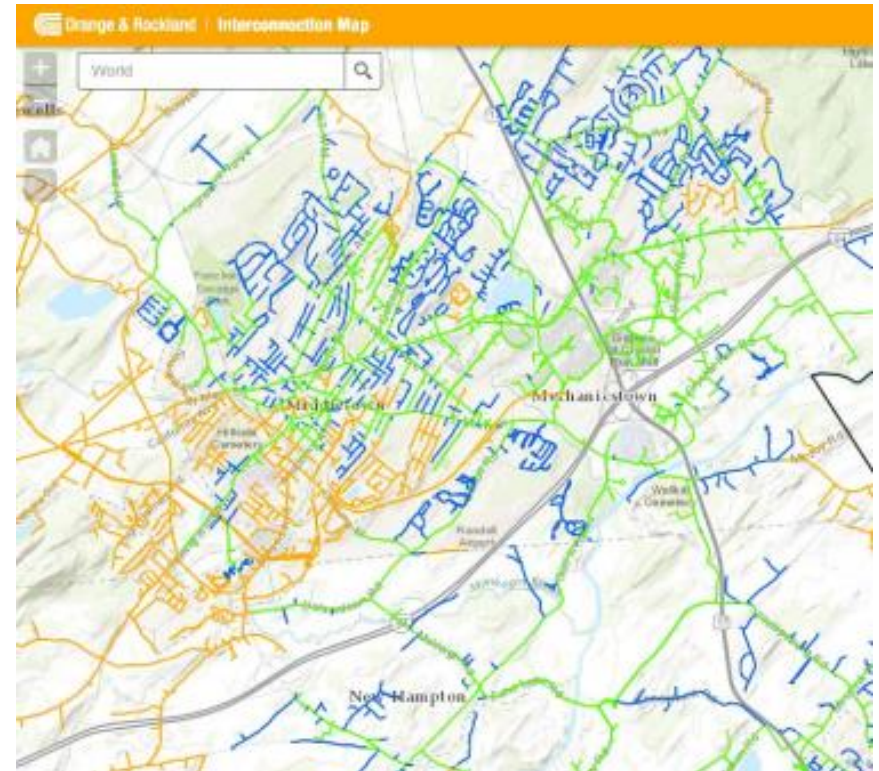
- Option: pre-application reporting
- Option: interconnection maps

Exclusion Zones: Atlantic City Electric, Delmarva, Pepco (NJ, DE, MD, DC)



Source: <http://www.pepco.com/community-commitment/renewable-energy/green-power-connection/restricted-circuit-map/>

Electrical Information: Orange and Rockland (NY)



Source: <http://coned.maps.arcgis.com/apps/webappviewer/index.html?id=566397d6a395447f9ab80dc9941f0d31>

Other Concerns and Experiences

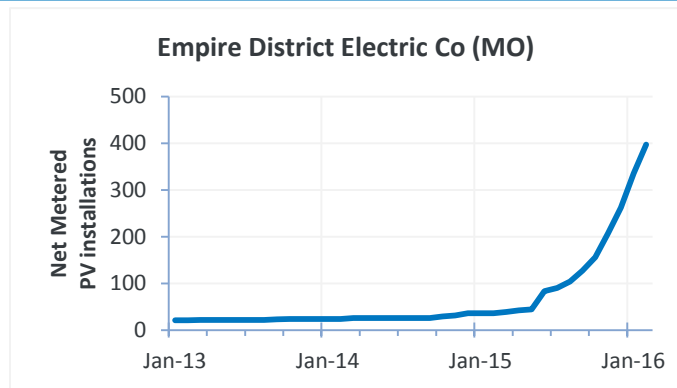
Uncertainty in upgrade costs (CA)

- Option: unit cost guide
- Option: “enhanced” pre-application report
- Option: “cost envelope” for estimates

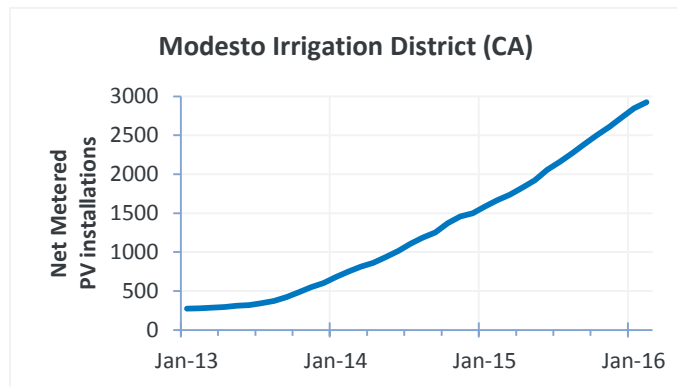
Performance on application processing timelines

- Option: performance tracking (CA, MA, NY, HI)
- Option: incentive/penalty mechanisms (MA)
 - Developed through collaborative process (TSRG)

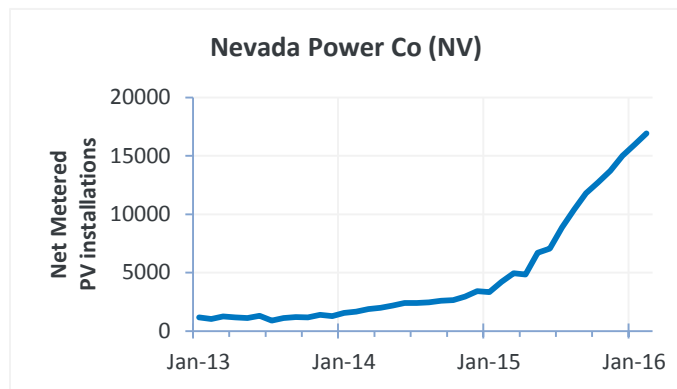
Message #3: Big Changes (10x) Can Happen Quickly



Story: Strong rebates, implemented in May 2015, push solar into wide viability.



Story: Growing economic viability overcomes decline in state incentives to drive steady growth.



Story: Solar reaches economic “tipping point” in late 2014, attracting scale from national installers. Pre-Dec. 2015 installs were granted grandfathering.

Source: Data compiled from EIA Form 826 – Net Metering

Distributed Generation Interconnection Collaborative



- Funded by DOE SunShot Initiative
- Peer exchange on interconnection
- 16 webinars produced to date
- Next webinar: April 5th, 2017, on energy storage interconnection
- Diverse group of speakers (below)

Utilities

Southern California Edison
Pacific Gas and Electric (PG&E) (x2)
San Diego Gas and Electric (SDG&E)
Sacramento Municipal Utility District (SMUD)
Hawaiian Electric Companies (HECO) (x2)
Arizona Public Service (APS) (x2)
Salt River Project (SRP)
Tucson Electric Power (TEP)
PEPCO
Con Edison
National Grid
Pasadena Water and Power
Fremont (NE) Dept of Utilities

Research Organizations

RMI
EPRI
SEPA (x2)

National Laboratories

NREL (x2)
Sandia

Utility Associations

NRECA
WAPA

Other Presenters

Borrego Solar (x2)
Enphase Energy
ERCOT

www.nrel.gov/dgic/



Thank You!

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