



Reforming the Energy Vision (REV) - DSIP/DSP

Distributed Resource Integration
Damian Sciano



Agenda

- Reforming the Energy Vision (REV) summary
- Lessons Learned
- DSIP Content
- Stakeholder Engagement
- Next Steps

State Energy Plan for 2030 Guide REV

40% reduction in
Greenhouse Gas (GHG)
emissions from 1990

50% of electricity
generation from renewable
energy resources

600 Trillion BTU
increase in statewide
energy efficiency

Guiding Principles

- Market transformation
- Community engagement
- Efficiency
- Private sector investment
- Innovation and technology
- Customer value and choice

Regulatory Mechanisms

- Reforming the Energy Vision (REV)
- Clean Energy Standard

In addition, NYC has 80 by 50



Reforming the Energy Vision has Three Tracks



Track One: Implementation

Distribution-level market design, technical platform, integrated system planning & operation, new utility business models, ownership of DER (Order issued Feb 2015)

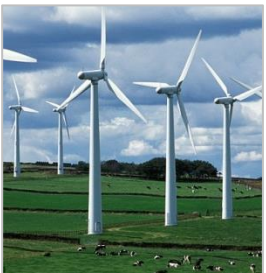
- Utilities will be the Distributed System Platform
- Utility ownership of DER limited to backstop
- 5-Year Implementation Plan due 6/30/16; biannually thereafter; inform via demos
- Energy Efficiency Transition Implementation Plan (ETIP) filed July 15
- BCA Order issued Feb 2016 has direct implications for DSIP filing



Track Two: Regulatory & Ratemaking

Rate design, performance-based ratemaking, extended rate case periods

- Staff straw proposal issued July 28



Track Three: Renewables

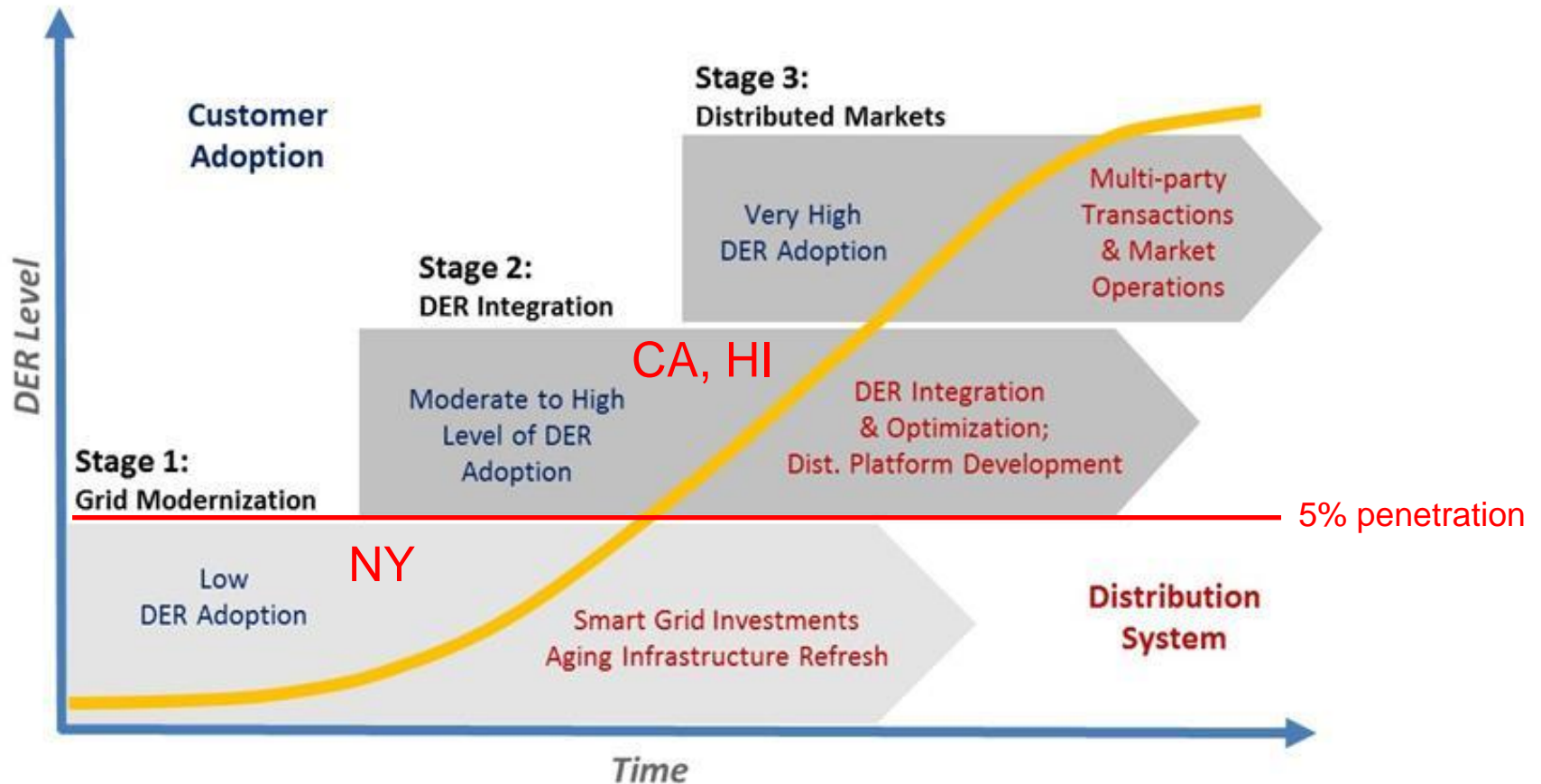
Large-scale renewables, renewable portfolio standard

- NYSERDA options paper issued June 1
- Utility ownership largely rejected by PSC

Build Off Industry Lessons Learned

- Cost and Reliability Challenges
- Every kWh of renewables is not dispatched equally
- The grid is a critical enabler of most DER

DER penetration remain below 5% even 10 years out



Source: IEEE paper 2015

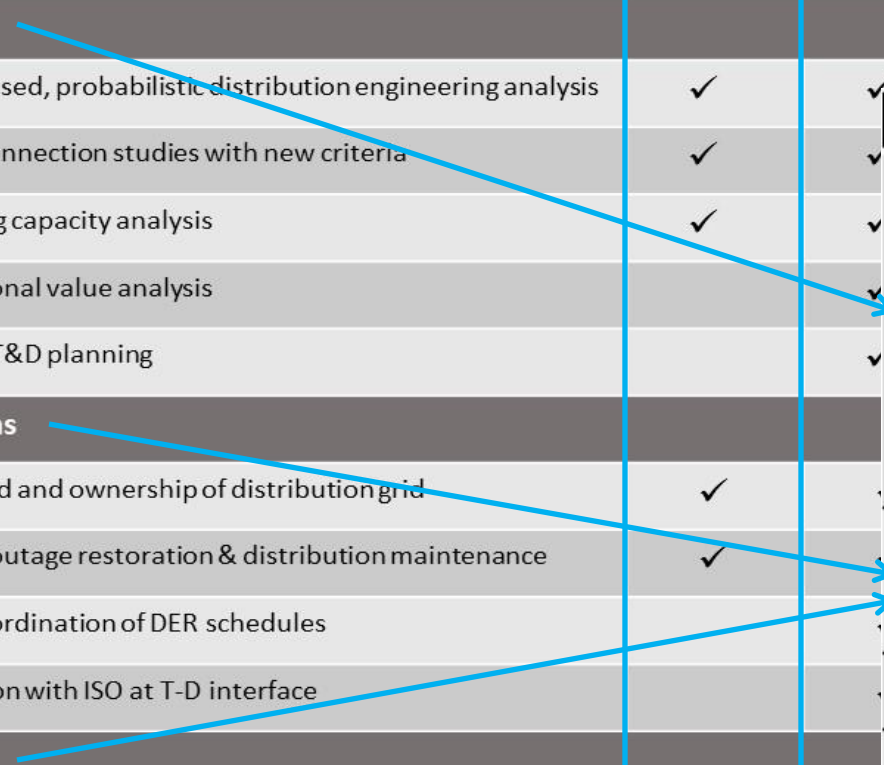
The Forecast Dictates Areas to Focus On

Distribution Functions	Stage 1	Stage 2	Stage 3
1. Planning			
A. Scenario based, probabilistic distribution engineering analysis	✓	✓	✓
B. DER Interconnection studies with new criteria	✓	✓	✓
C. DER Hosting capacity analysis	✓	✓	✓
D. DER Locational value analysis		✓	✓
E. Integrated T&D planning		✓	✓
2. Operations			
A. Design-build and ownership of distribution grid	✓	✓	✓
B. Switching, outage restoration & distribution maintenance	✓	✓	✓
C. Physical coordination of DER schedules		✓	✓
D. Coordination with ISO at T-D interface		✓	✓
3. Market			
A. Sourcing distribution grid services		✓	✓
B. Optimally dispatch DER provided distribution grid services		✓	✓
C. Aggregation of DER for wholesale market participation		✓	✓
D. Creation & operation of distribution level energy markets; transactions among DER			✓
E. Clearing and settlements for inter-DER transactions			✓
F. Market facilitation services			✓

The DSIP Guidance Matches This

Distribution Functions	Stage 1	Stage 2	Stage 3
1. Planning			
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B. DER Interconnection studies with new criteria	✓	✓	
C. DER Hosting capacity analysis	✓	✓	
D. DER Locational value analysis		✓	
E. Integrated T&D planning		✓	
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Chapter	Section
Distribution System Planning	Forecast of Demand and Energy Growth
	Available DER Resources
	Delivery Infrastructure Capital Investment Plans
	Beneficial Locations for DER Deployment
	Hosting Capacity
Distribution Grid Operations	System Operations
	Volt/VAR Optimization (VVO)
	Interconnection Process
Advanced Metering	
Customer Data	
Appendices	BCA Handbook
	Demo Projects



Staff Guidance for June 30 DSIP Filing

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DSIP Filing Milestones

Completed

October 15	Staff issued DSIP guidance document
December 7	Stakeholder comments filed
January 6	Stakeholder responses filed
January 21	Staff issued BCA order
February 29	Stakeholder engagement

Going Forward

April 20	PSC DSIP order
May 5	Stakeholder engagement document due
June 30	Utilities file initial DSIP filing + BCA
November 1	Utilities jointly file Supplemental DSIP
Ongoing	Stakeholder engagement process

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Planning Process Before and **After** DER

Forecasting

- Organic Growth
- New business
- EE/DR
- Electric Vehicles
- **DER**

Planning

- Transmission
- Area substation
- Distribution
- New business
- **Publicize needs**

Construction

- Solutions built
- **Market to build DER solution**

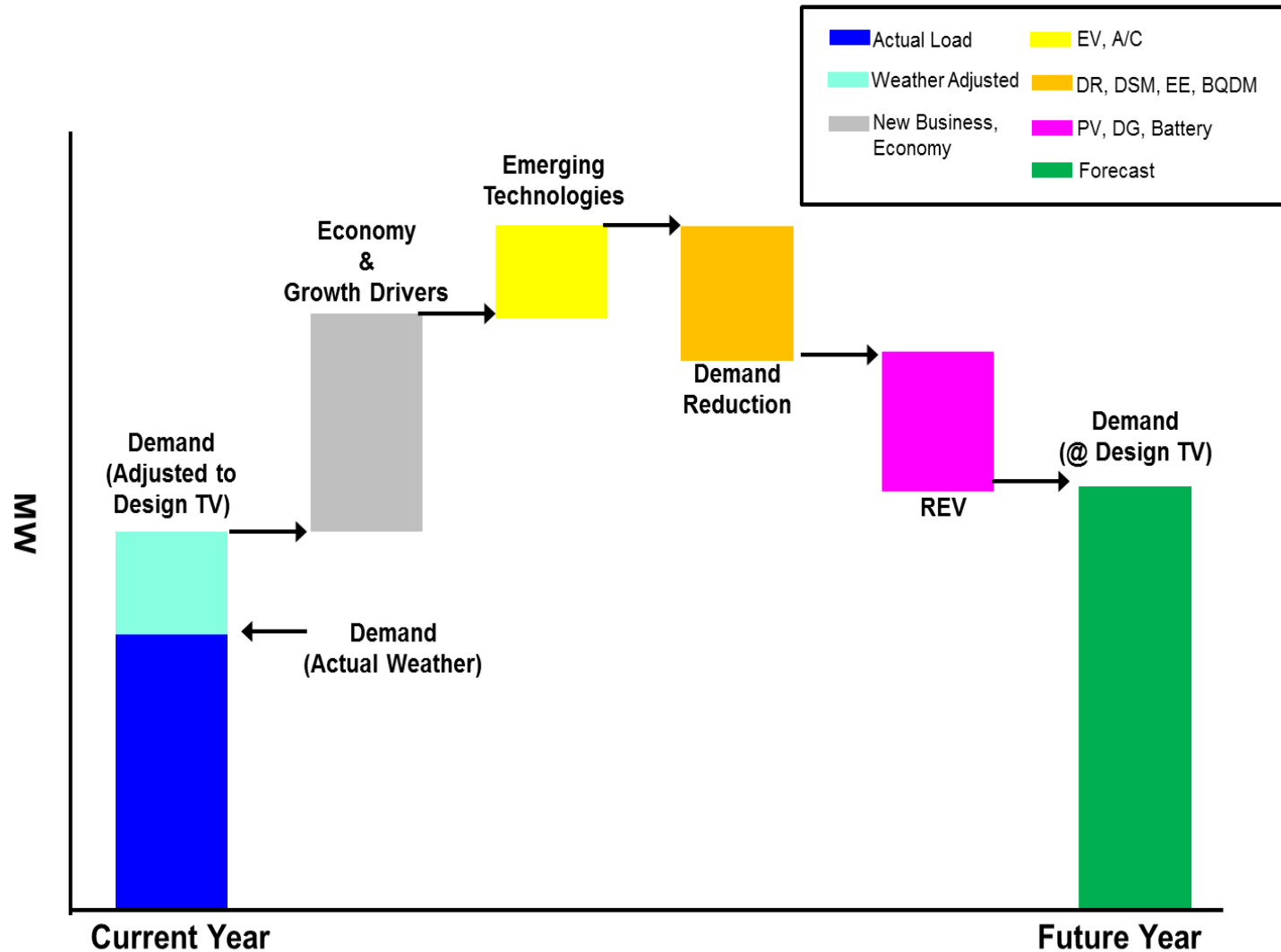
Operations

- Regional control centers
- Energy control center
- **DSP to map, measure, monitor, control DER**



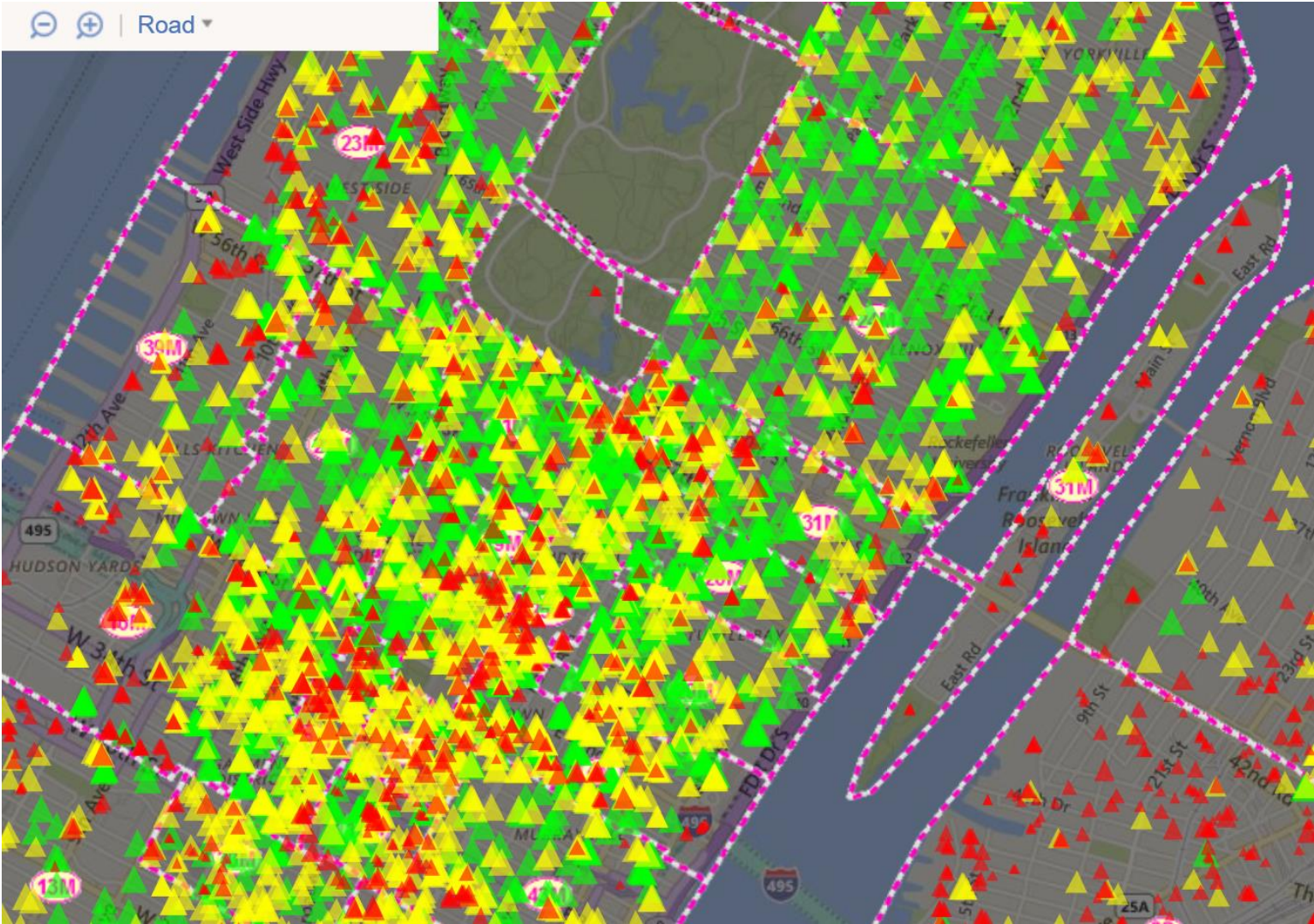
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Incorporating REV in our Forecast



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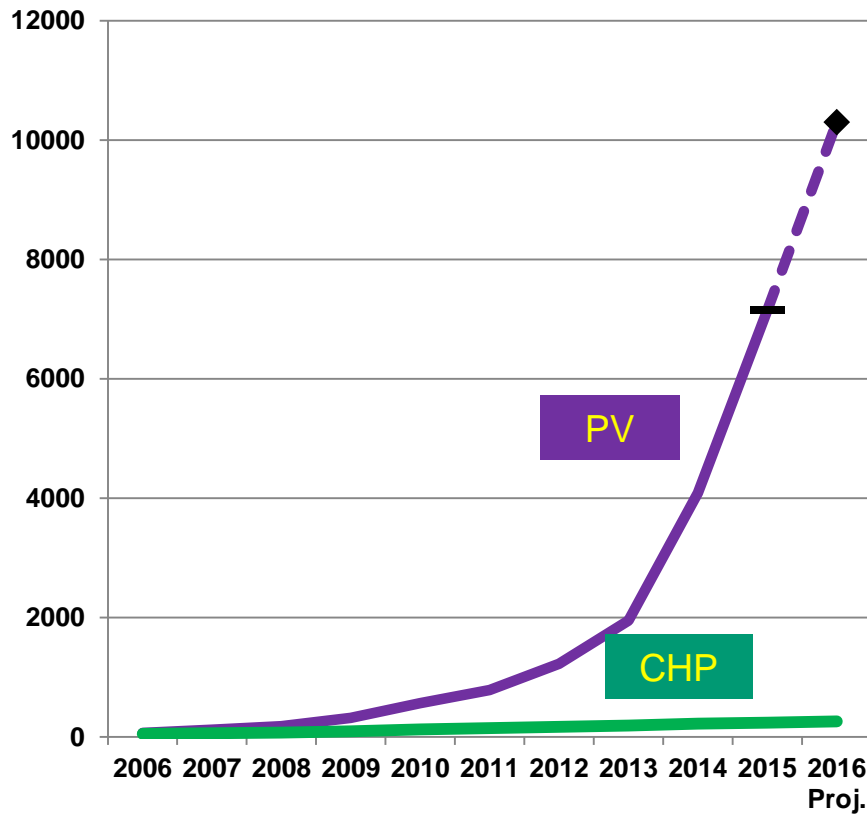
Hosting Capacity Map for Initial Filling



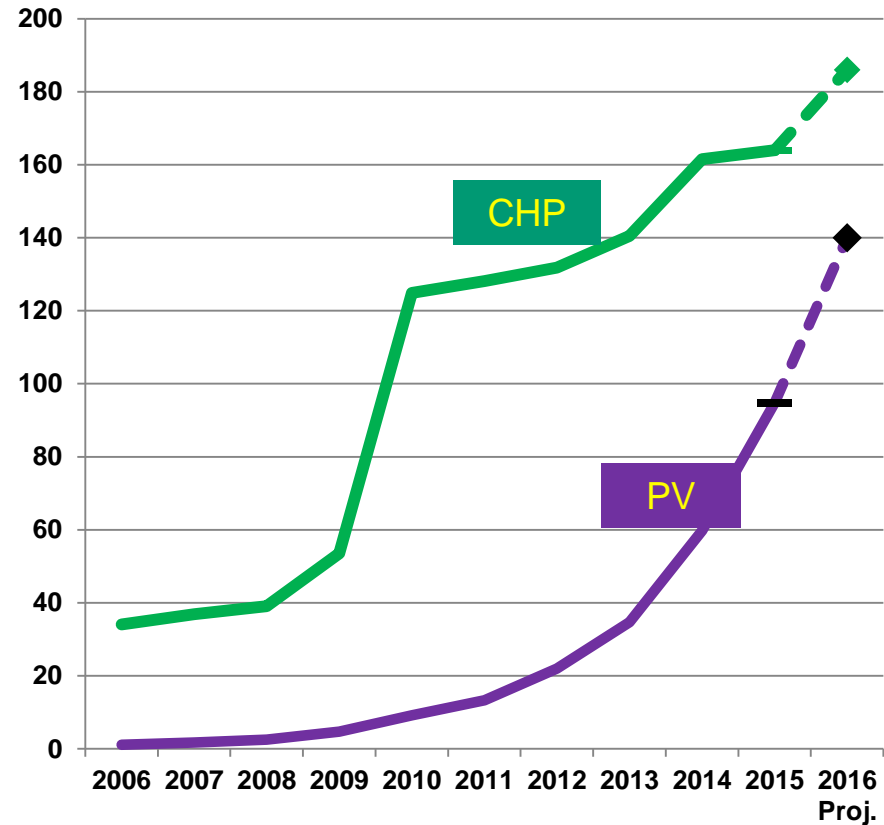
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Adoption Trends in Service Area

Total Installations



Total Installed Capacity



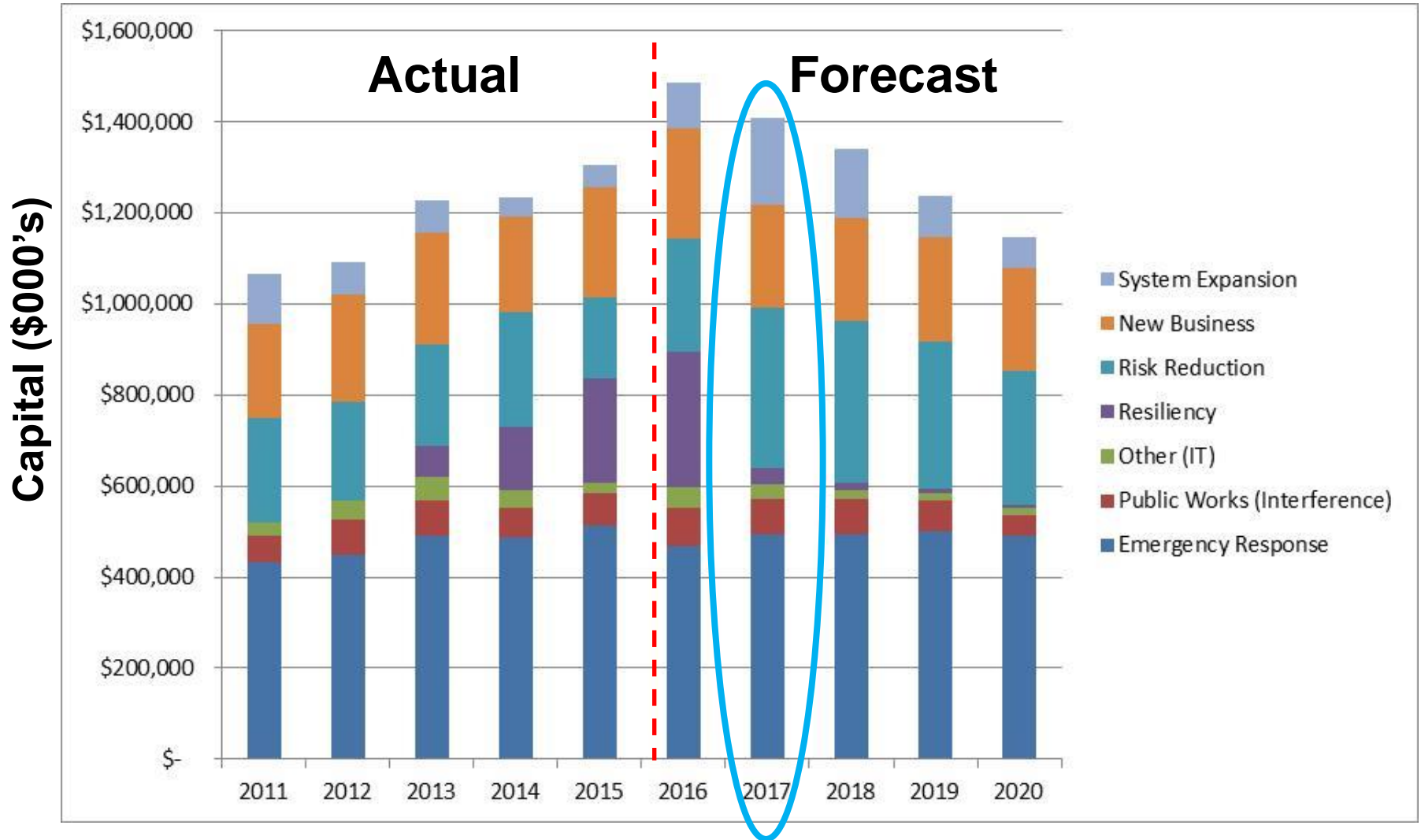
Source: Consolidated Edison Company of New York.

Capital Investments in a REV World

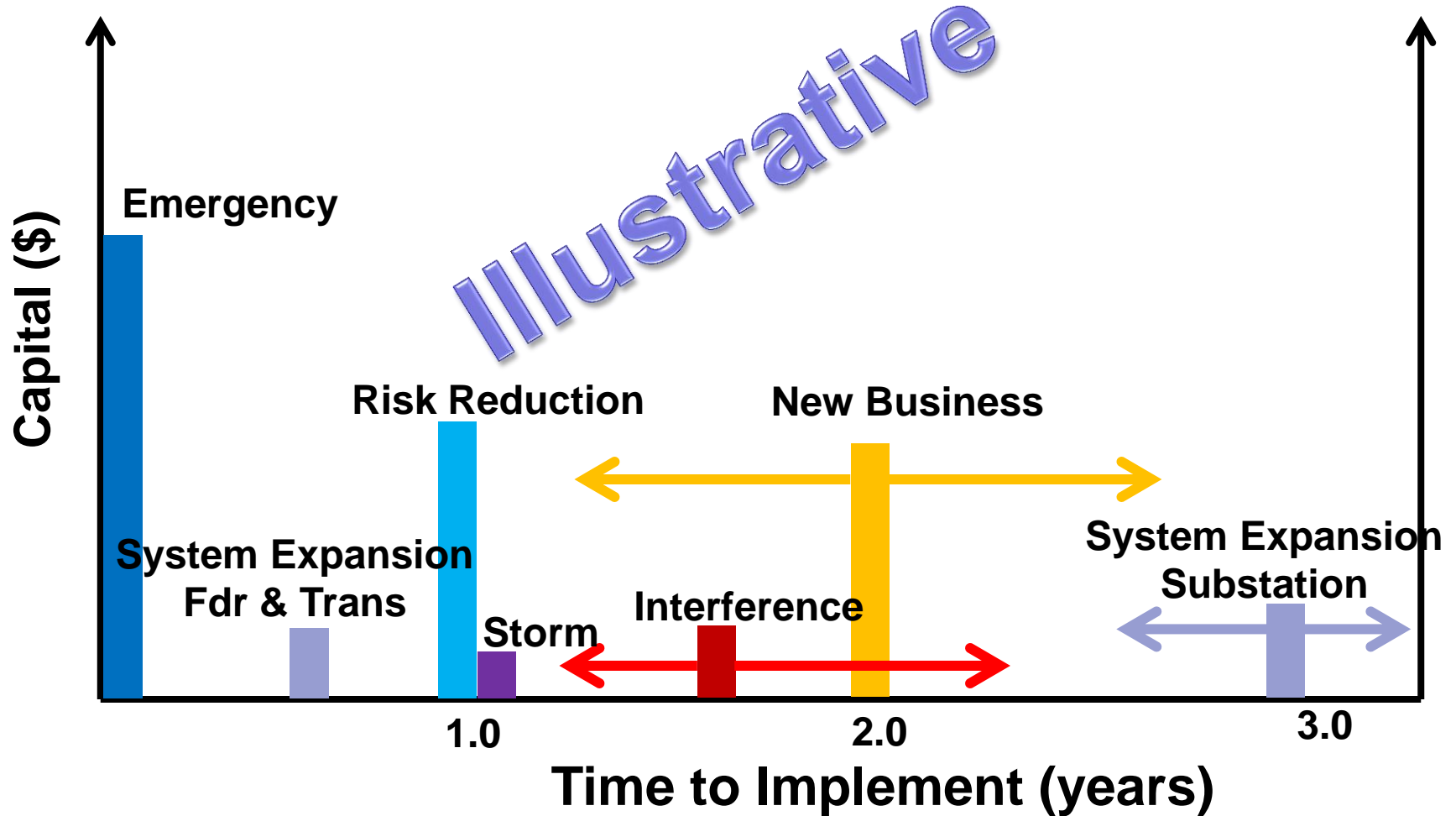
Expanded Benefit Cost Analysis

- REV will bring third party capital to bear
 - Driver is environmental goals
 - Guiding principle is market animation
- Fundamental change to justifying capital spends
 - Utility must evaluate non-wires alternatives using new BCA
 - Challenge is to maintain or improve reliability
- Non-emitting and renewable resources heavily favored
 - Carbon benefits at the EPA level
 - Wholesale and distribution credits add to value

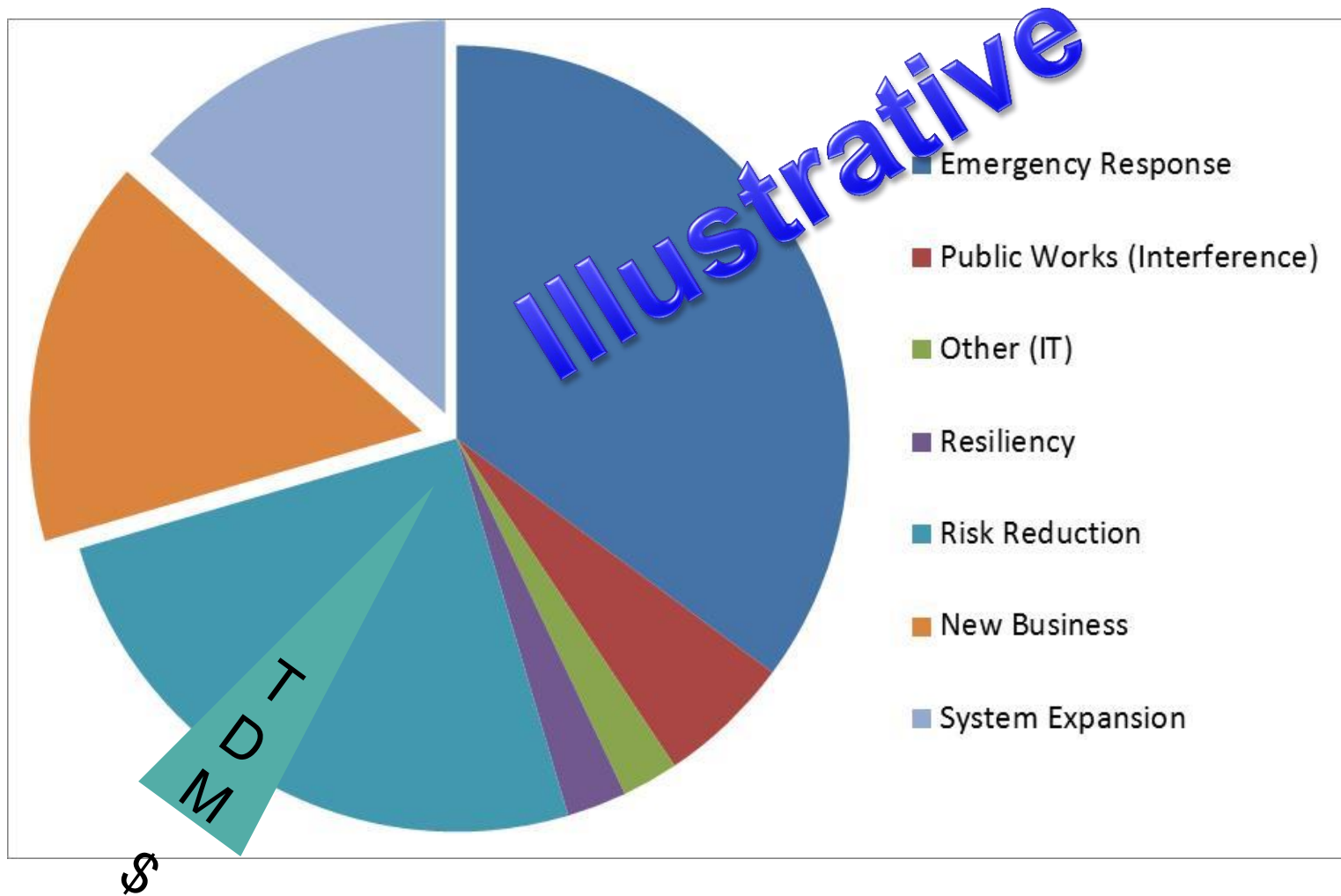
Discussion on Capital Investment and Where BCA Fits



Timing of T&D Capital Implementation

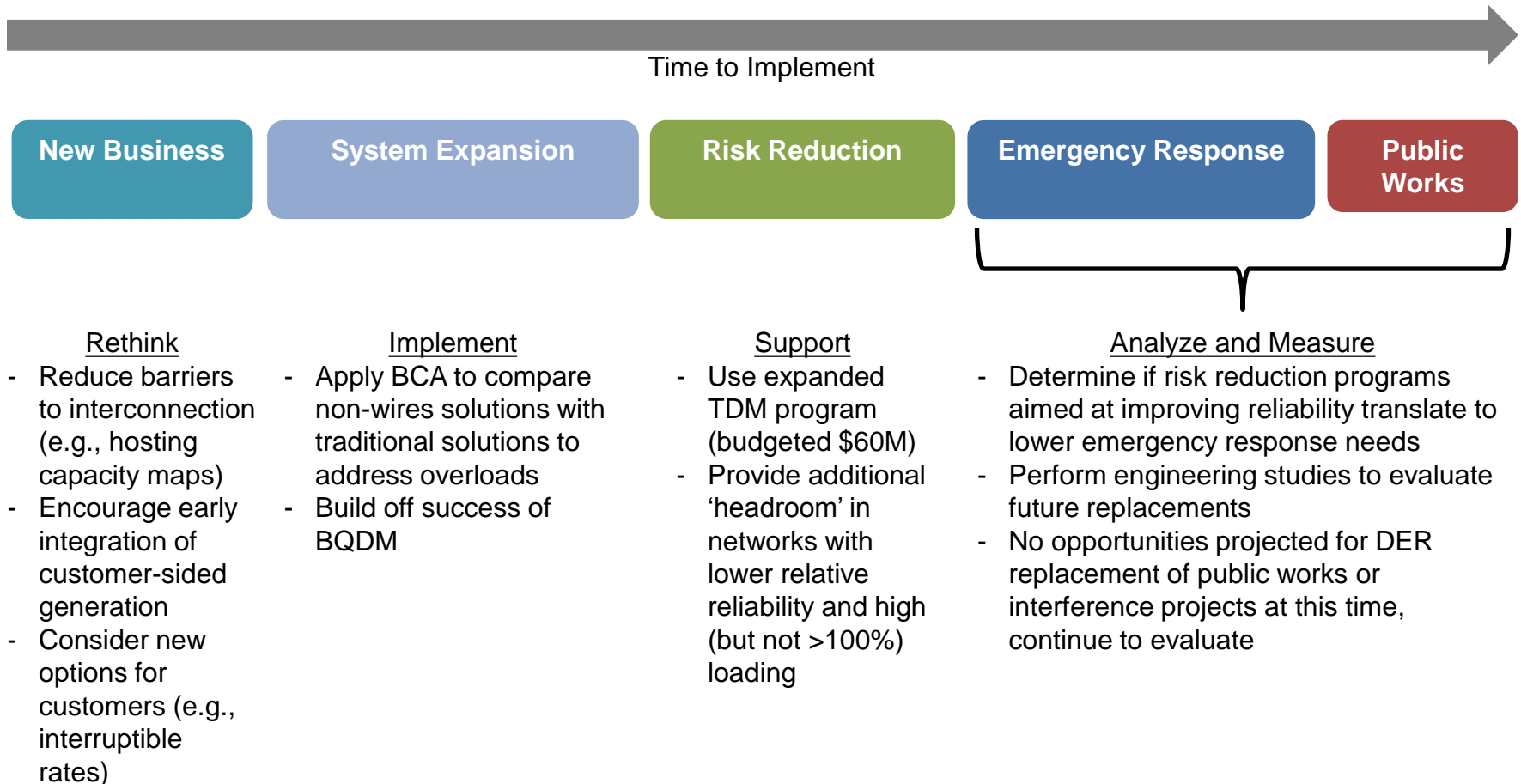


Snapshot of 2017 Spend & DER Opportunity:



In addition, BQDM & Demos provide additional \$

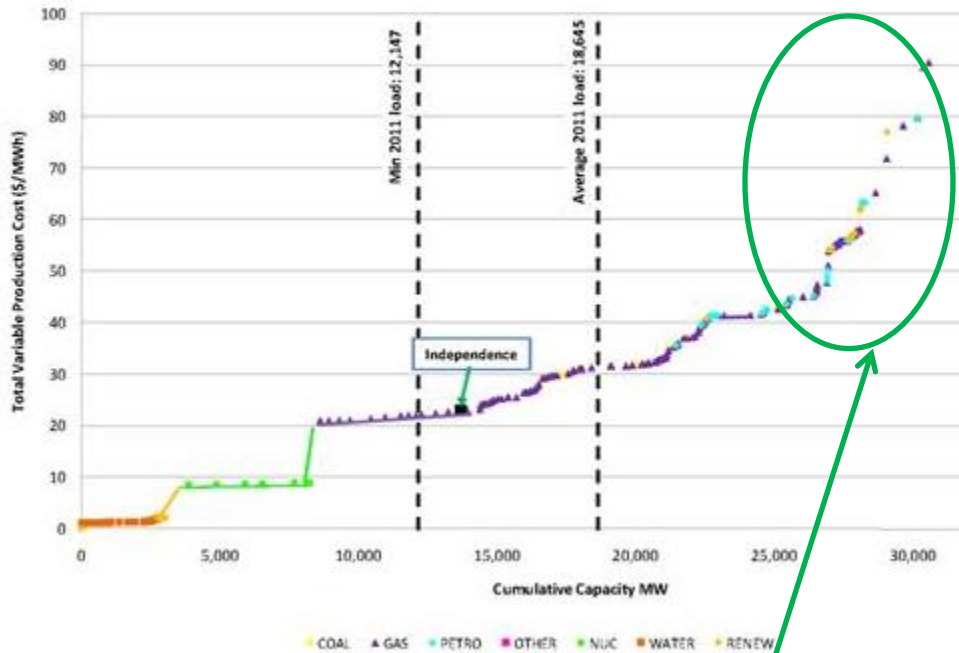
Proposed DSIP Approach to Identifying Capital Value



Peak reduction discussion

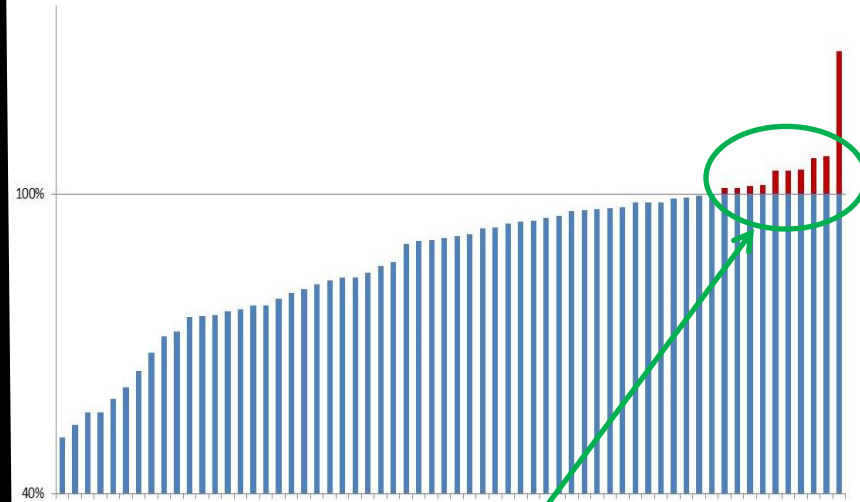
LMP Dispatch Curve

NYISO Genstack: \$3.00 Gas



Significant and continuous benefit to reducing wholesale peak

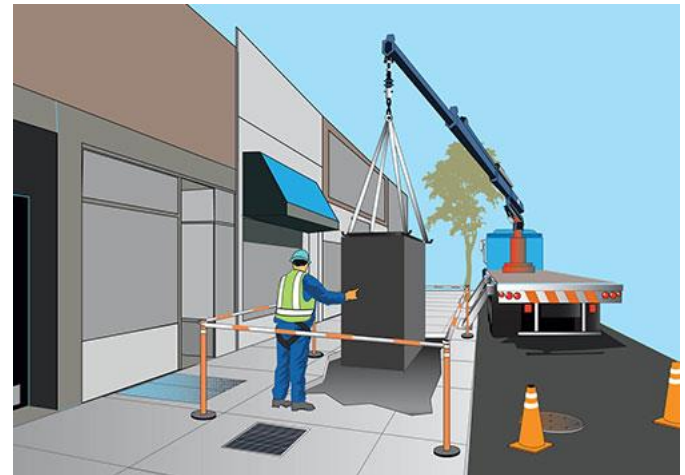
Distribution Capacity Utilization



Limited opportunity to reduce distribution

Utilize BCA process for System Expansion

- Due to organic load growth
- Several categories:
 - Area Substation
 - Feeder relief
 - Transformer/Secondary Relief
- Varying implementation times
 - Several years for substations
 - 9 months for feeders and transformers



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Tools We are Developing to Support BCA

- Integrated Demand Side Management (IDSMS) model
- BQDM
 - Experience with RFP process
 - Benefit cost analysis reviewed by staff
- Joint utilities select a vendor to help with BCA
 - BCA handbook (required with initial DSIP)
 - Societal cost test

System Expansion Project: Learn from BQDM

Deferral of \$1.2 billion in traditional network upgrades with distributed solutions

- Meets capacity shortfall via \$200 million program
 - Non-traditional customer-sided 41 MW (\$150 m)
 - Utility-sided solutions 11 MW (\$50 m)
- Long duration, night peaking network requires a portfolio of solution and an understanding of appropriate discount rates for various DER
- Ultimately, the effective DER contribution can be located anywhere within the foot print

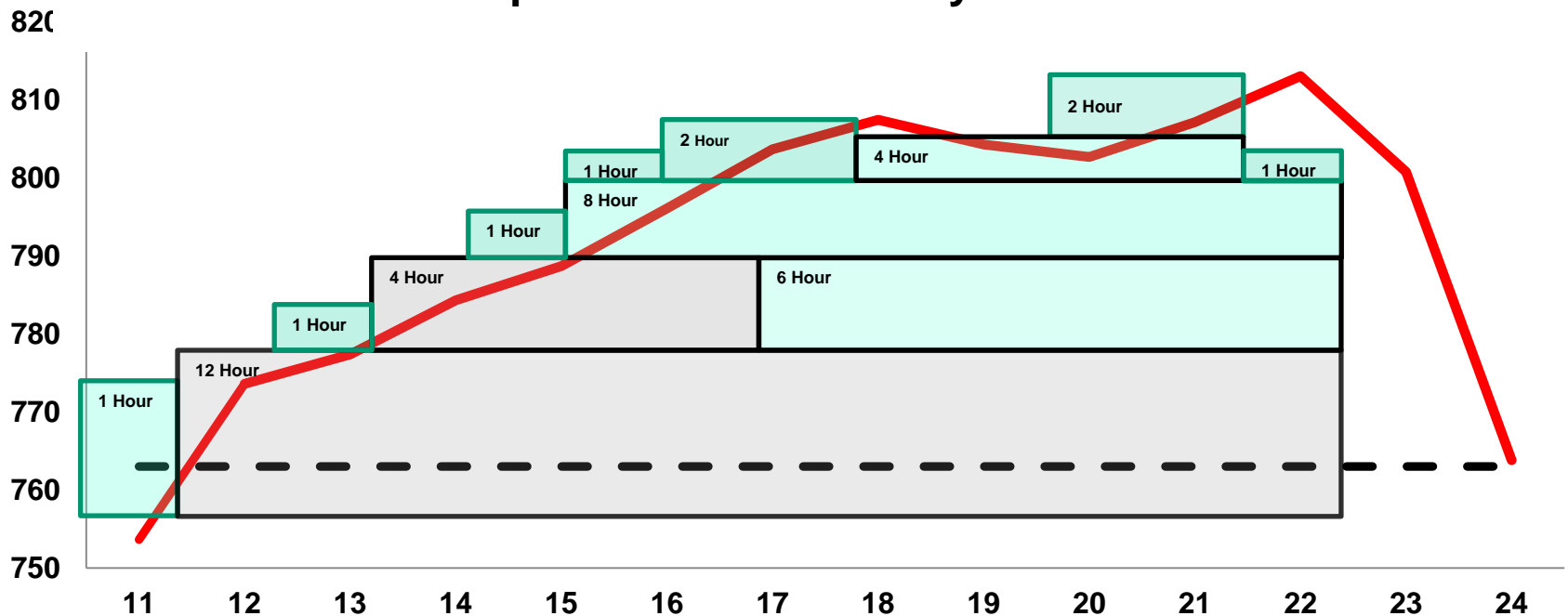


Institutionalize Processes Tested in BQDM

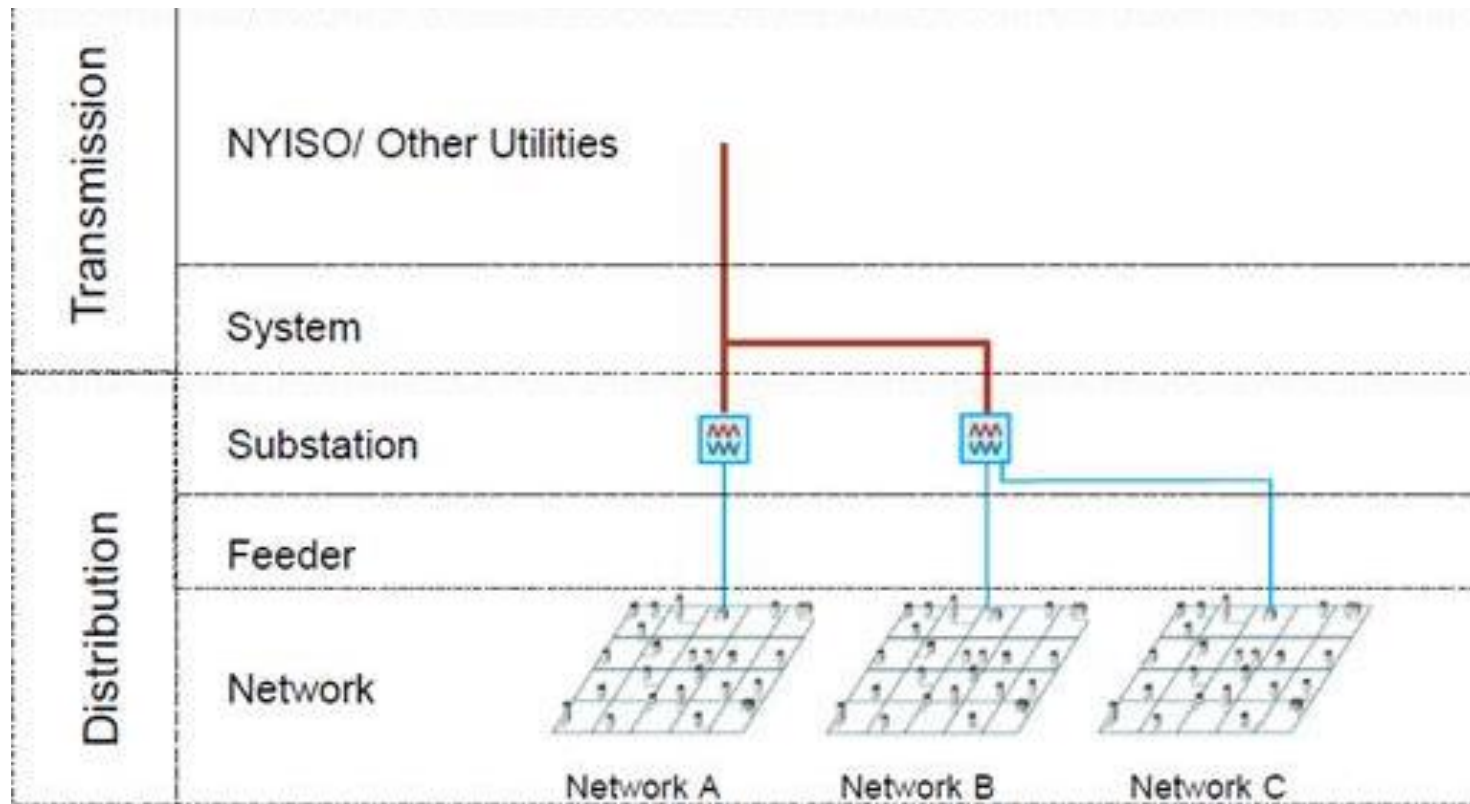


- \$1.2 billion substation deferral using portfolio of alternative investments in Central Brooklyn and Queens
- Earn rate-of-return plus incentive based on implementation

Sample Network Peak Day Load Curve

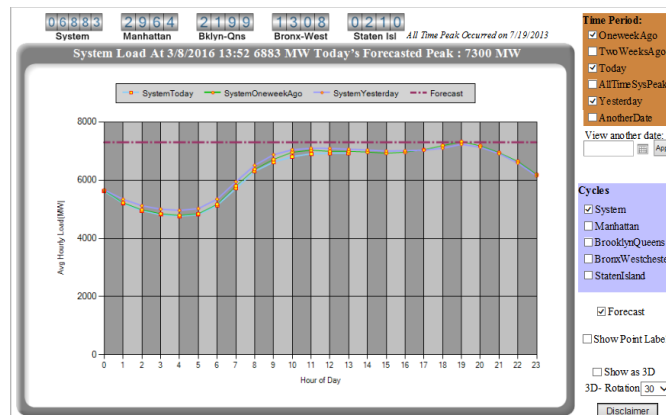


Various data is available at various levels



8760 Load Curves

- System Level
- Substation Level
- Network Level
- Individual Feeder Data



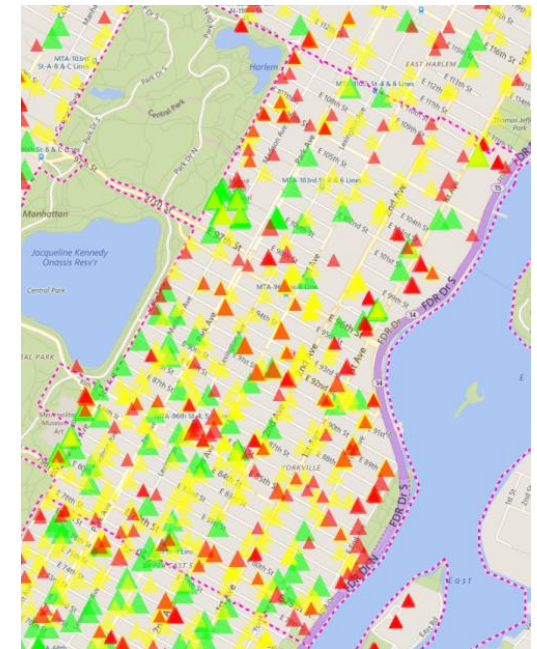
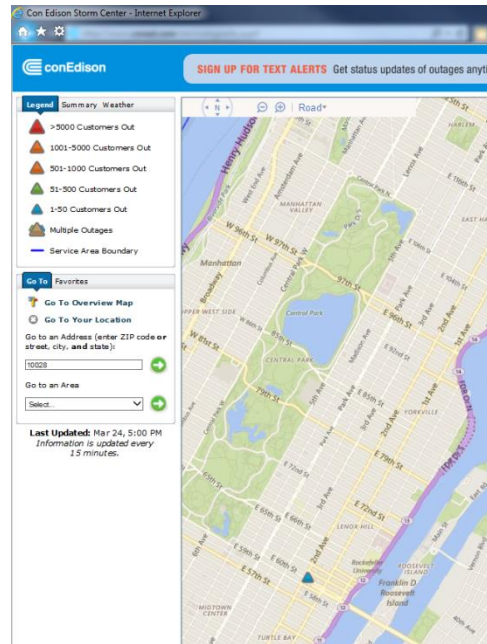
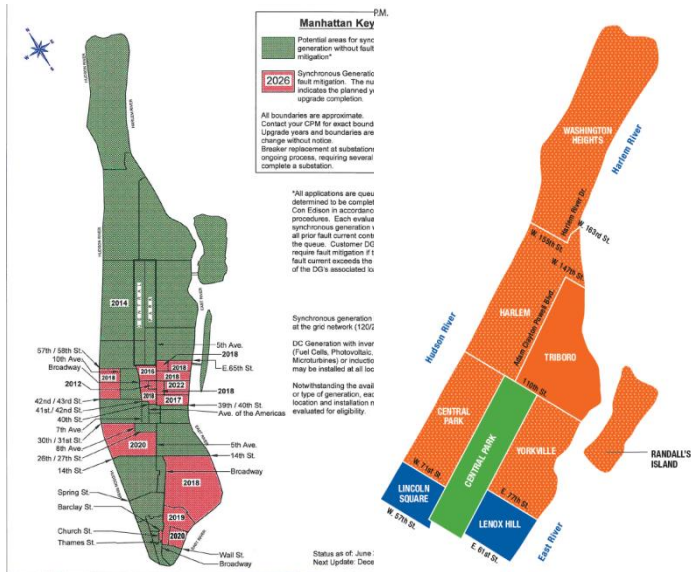
Mapping Systems

DG Map

CSRP Maps

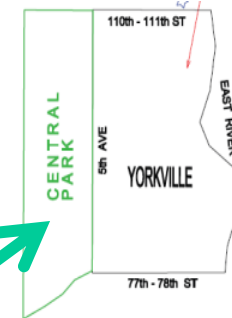
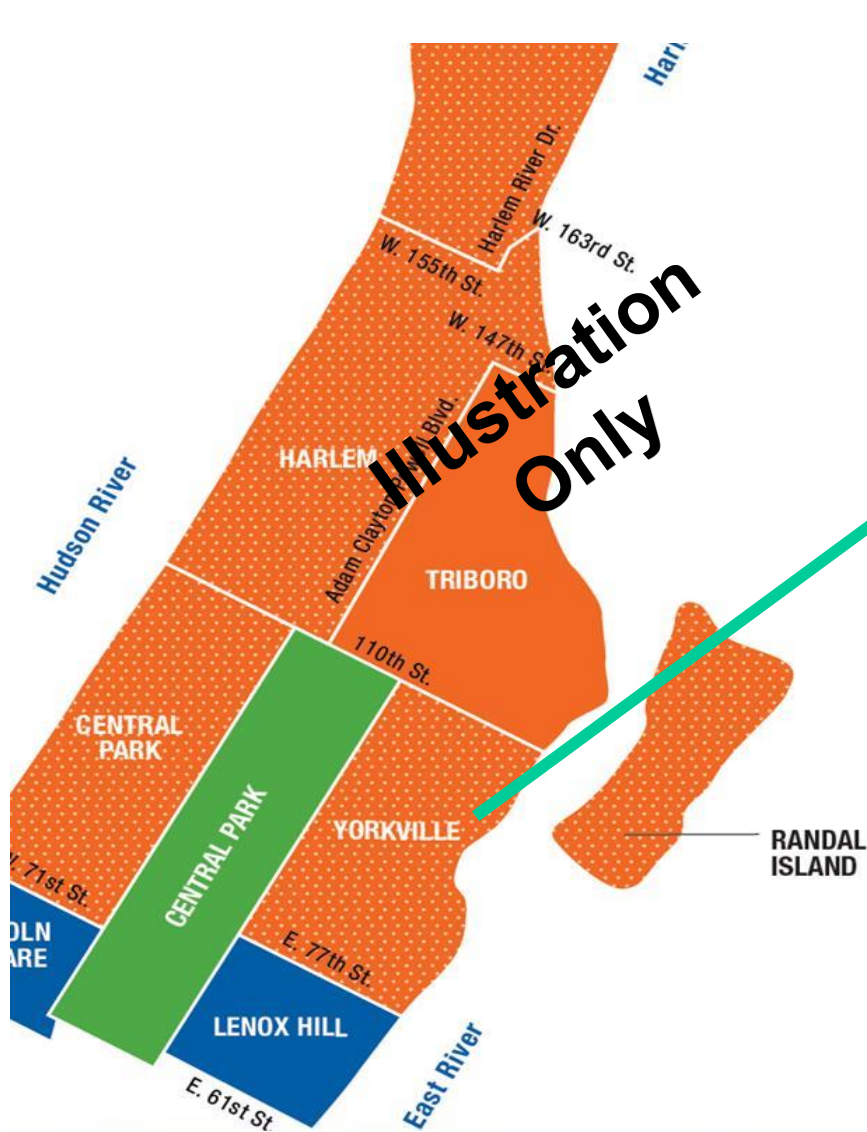
Outage Map

PVL HC Map

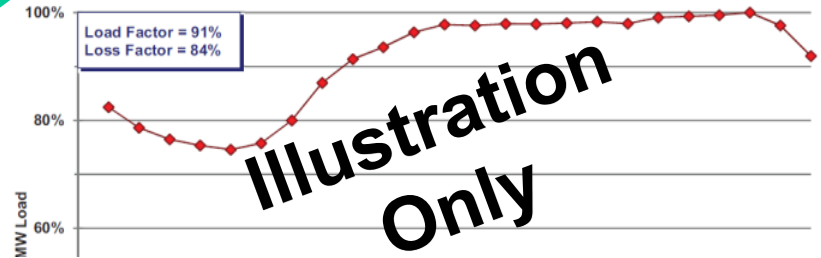


Opportunity to leverage existing efforts with DG constraints, CSRP DR, Outage Map, and PVL hosting capacity by layering these maps. DCX is trying to streamline our customer facing information and here is an opportunity to provide information to customers and DER providers with a holistic approach.

Sharing System Data



YORKVILLE
Projected Summer 2015 Independent Peak Hourly Load Cycle for WEEKDAY at Peak Load of 306 MW



	- 5 year	- 4 year	- 3 year	- 2 year	- 1 year	Current
MW	295	297	299	301	303	306
	Historical Growth			0.61%		
Current	+ 1 year	+ 2 year	+ 3 year	+ 4 year	+ 5 year	
306	318	322	328	330	330	
	Forecast Growth			1.43%		

Customer Data Sharing

Data Exchange and Green Button Connect

- Business Need
 - For customer engagement, provide customer electric (and possibly gas) data to enable value services
 - For PSC requirement, robust data exchange to animate market
- Deliverables
 - Make AMI data available to customers
 - Green Button Connect
- Goals
 - Leverage Green Button Connect and AMI to meet the DSIP requirements
 - Build Green Button Connect by the end of 2017

Technical Data Conferences Underway

About Green Button

What is Green Button?

The emerging Green Button initiative enables you to download your detailed energy information with a simple click.

Green Button was inspired by the success of Blue Button, which gave veterans quick and easy access to their medical records.

Where did Green Button originate?

Green Button was developed by the energy industry in a consensus process and now may be adopted voluntarily by utilities.

Green Button builds on policy objectives in the Obama Administration's Blueprint For a Secure Energy Future and Policy Framework for the 21st Century Grid. It aims to ensure that consumers have timely access to their own energy data in consumer-friendly and computer-friendly formats.

How does Green Button work?

Green Button starts with your utility. Follow these steps:

1. Look for the Green button logo on your utility's website.
2. If available, great! Download your Green Button data.
3. Now use the energy apps on our website to get the most out of Green Button:
 - Create a free account and sign in.
 - Click Upload to send us your latest Green Button file.
 - Take advantage of the apps that use your data responsibly and securely.



Upload your energy information.

Easily upload information about your energy usage and costs. Get your Green Button file from your utility, then drag and drop it here.

Find valuable applications.

Once you've uploaded your information, get the most from it by using apps listed on this site.

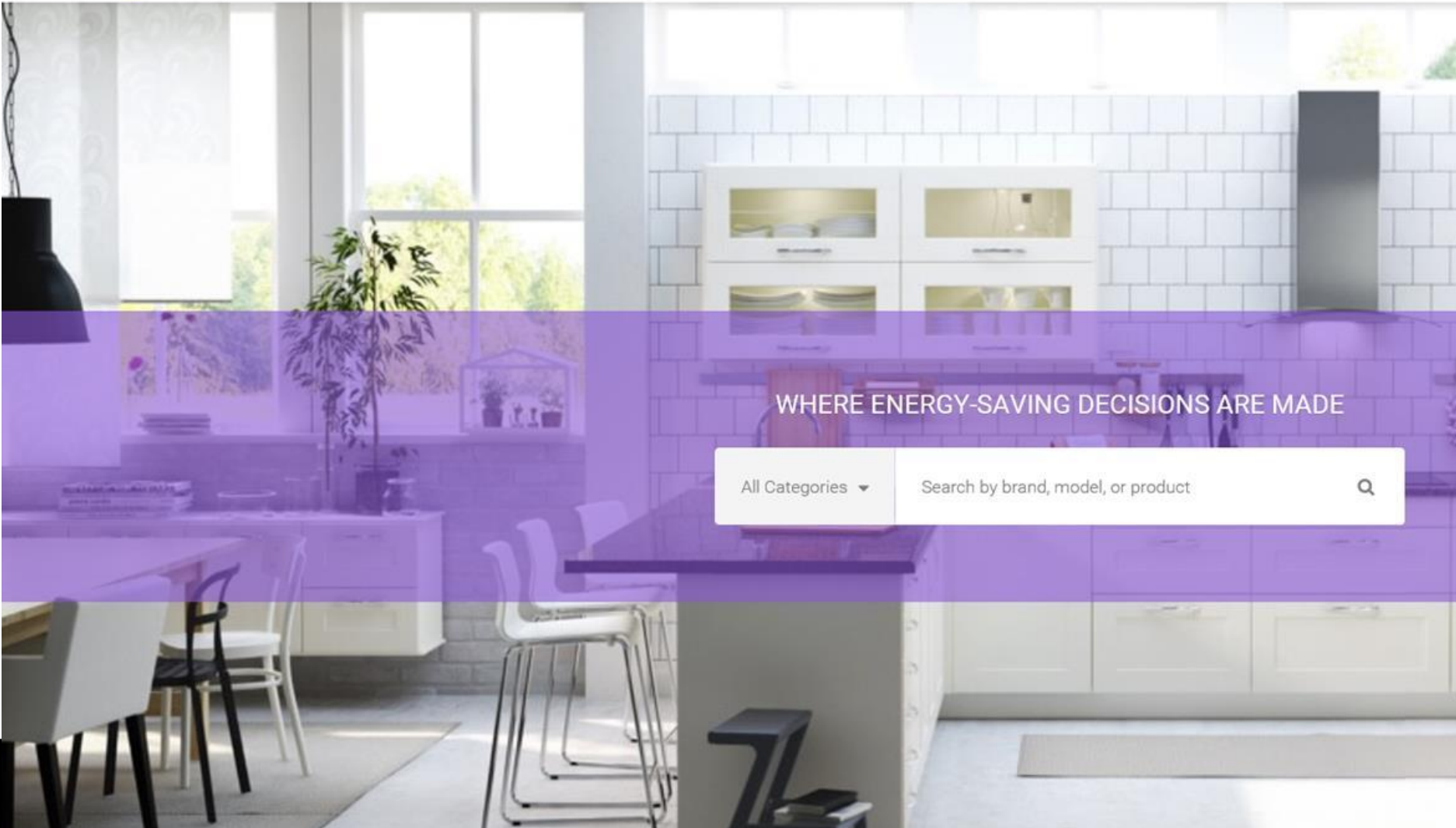
Live smarter, lower your energy cost.

Get in the habit of using energy efficiently, and save money. There are several simple practices that can make a big difference.

A powerful platform for developers.

Create game-changing applications powered by energy and device data.

Energy Marketplace to be started as a DEMO project in 2016(?) – Rollout in 2018(?)



WHERE ENERGY-SAVING DECISIONS ARE MADE

All Categories ▾

Search by brand, model, or product



Stakeholder Engagement

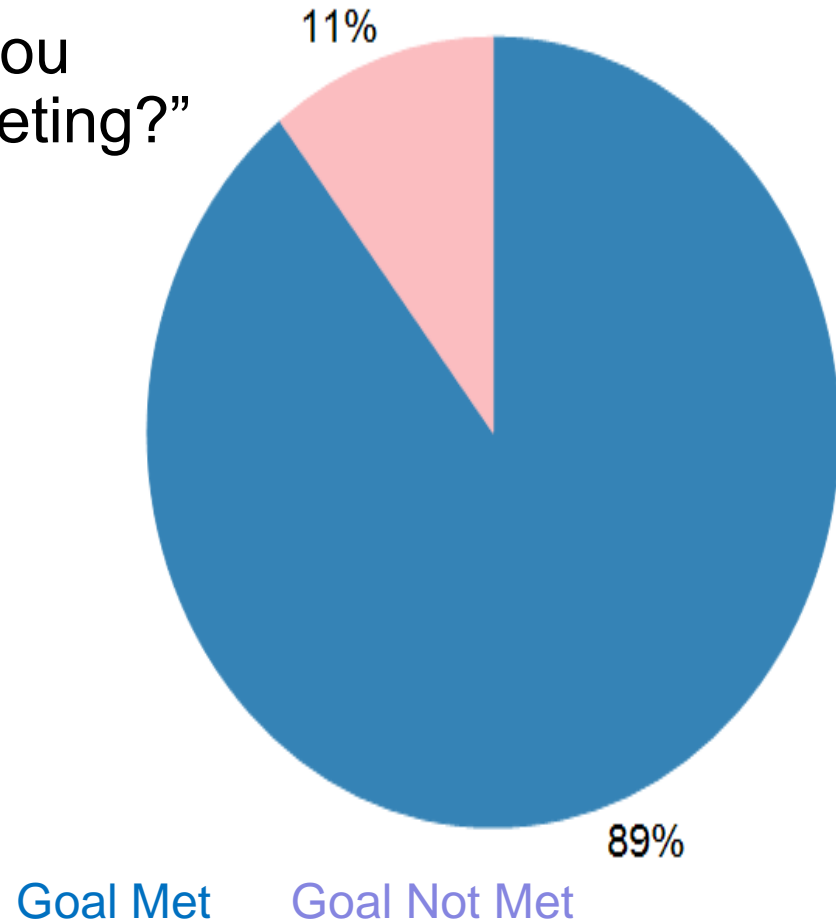
- Informational forum held on February 29 at TLC
 - T&D 101
 - Tours

- Outreach activities were engaged



Stakeholder Session Survey

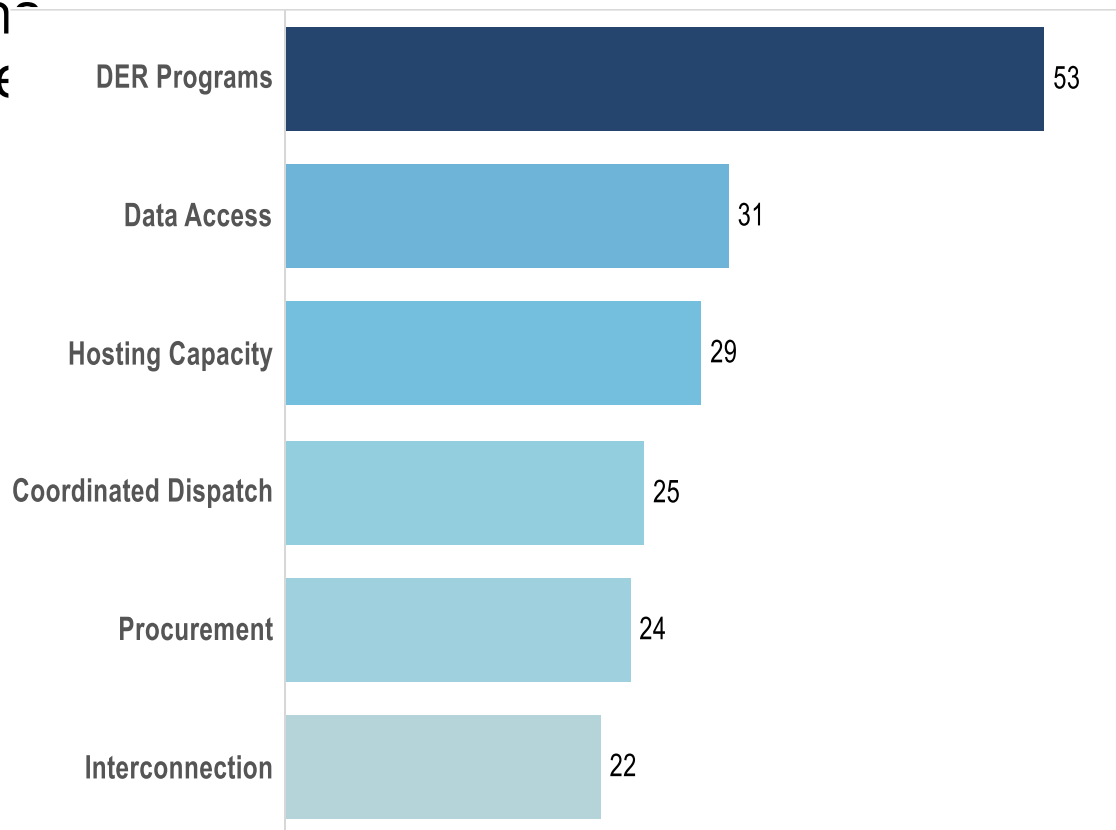
“Taking everything into consideration, how would you rate today’s Joint Utility Meeting?”



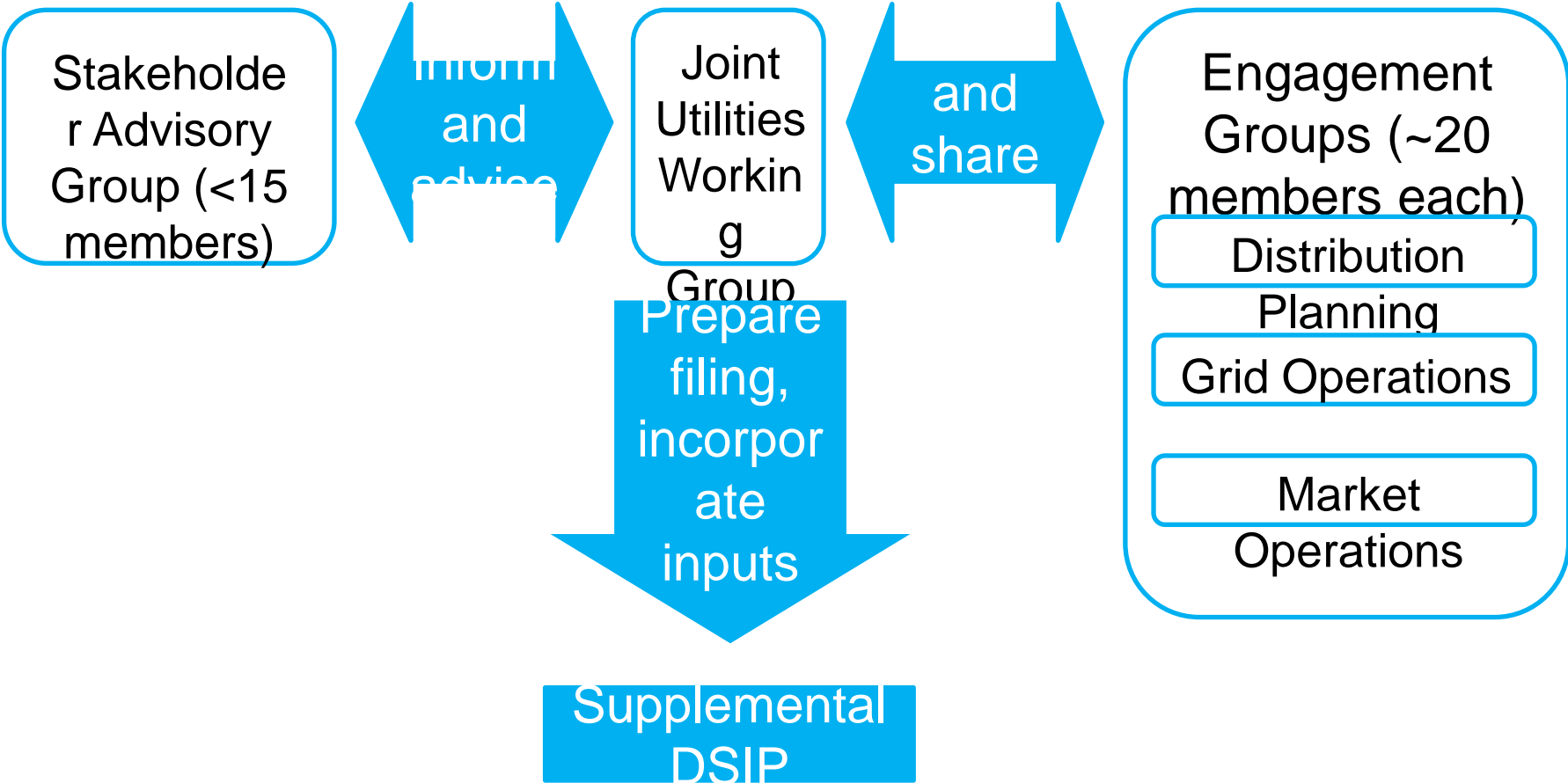
Stakeholder Session February 2016

Cont'd

The Joint Utilities are considering future sessions. Choose your area of interest.



Stakeholder Engagement



Supplemental DSIP Topics

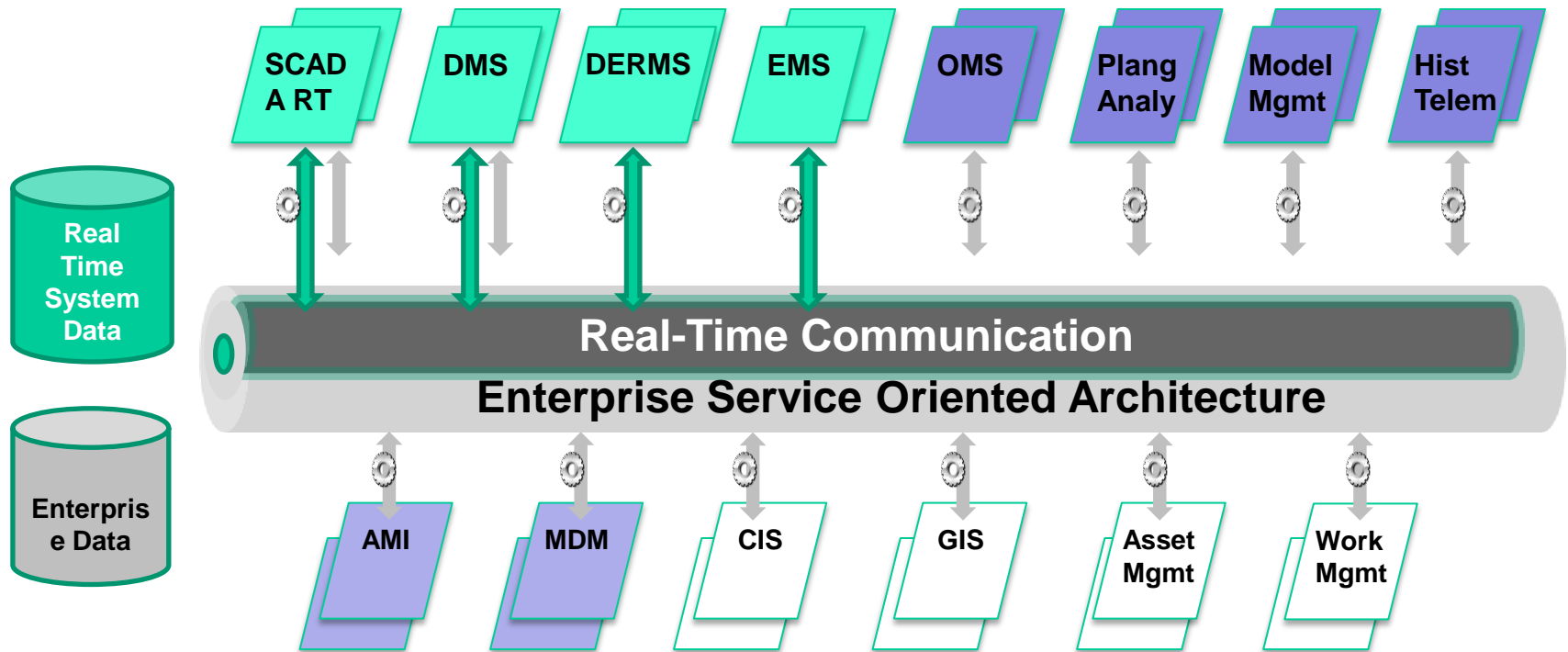
Working Groups	Distribution System Planning		Grid Operations		Market Operations	
	Topics	Improved Interconnection Process	Hosting Capacity Methodology	System Data	Monitoring & Control	Customer Data
Demand Forecasting		BCA Screening	Joint System Planning and System Operations	Cyber Security	Market Participant Rules	Measurement / Verification
DER Forecasting		Probabilistic Planning Methodology	Coordinated Dispatch and Tools – Other DER	NYISO, Coordinated DER Dispatch - DR	Granular Pricing	Settlement Procedures
Storage Methodology		Load Flow Analysis Process	ISO Roles and Responsibilities	Coordination at T&D interfaces		

Ongoing Challenges

- Compressed schedules
- Incorporating stakeholder input
- Establishing a Joint Utility view
- Continued coordination with all REV initiatives
 - Reconciling BCA order
 - Value of DER to “D” Proceeding (NEM successor tariff)
 - Interconnection, data sharing and others

Continue work on DSP IT Roadmap

- DER mapping
- Monitoring and control
- DER management system
- Hosting capacity
- Platforms for internal and external use
- Leverage existing and emerging systems



Next Steps

- DSIP filings on target
 - Targeting end of April to begin review process for June 30th
 - Joint Utility filing on November 1st
 - Active and ongoing JU Stakeholder Engagement with ICF
- Continued coordination with all REV initiatives
 - Reconciling BCA order
 - LMP+D white paper published (will inform DSIP)
 - Interconnection, data sharing and others
- Received staff guidance/order on April 20th