

Integrated Demand Side Management

Can the Sum of the Parts Be Greater Than the Whole?

Rich Hasselman
GDS Associates, Inc.

Association of Energy Service Professionals
Webinar
May 3, 2012



GDS Associates, Inc.
Engineers and Consultants

Overview

- **What is iDSM?**
- **What does an iDSM world look like?**
- **Near term efforts**



GDS Associates

- **Engineering and Consulting Firm**
- **Offices throughout the U.S.**
- **Work with utilities, programs, and others**
- **Program services:**
 - Planning
 - Operations
 - Evaluation
 - Measurement and Verification
 - Feasibility studies
 - Regulatory compliance



What Is iDSM?

- **A program based definition:**

Program design, planning, marketing, implementation, and evaluation that integrates energy efficiency, demand response, distributed generation, energy storage, education, rates, metering, and utility markets (whew)

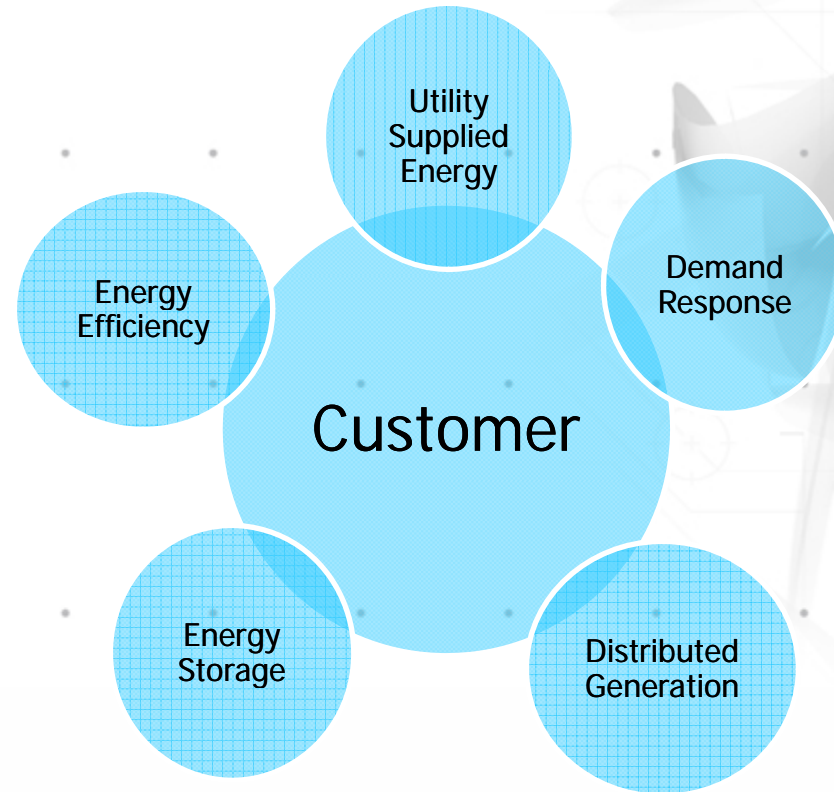
- **A synergy based definition:**

A portfolio view that combines the benefits and costs of all DSM options available in the market via an internally consistent approach.



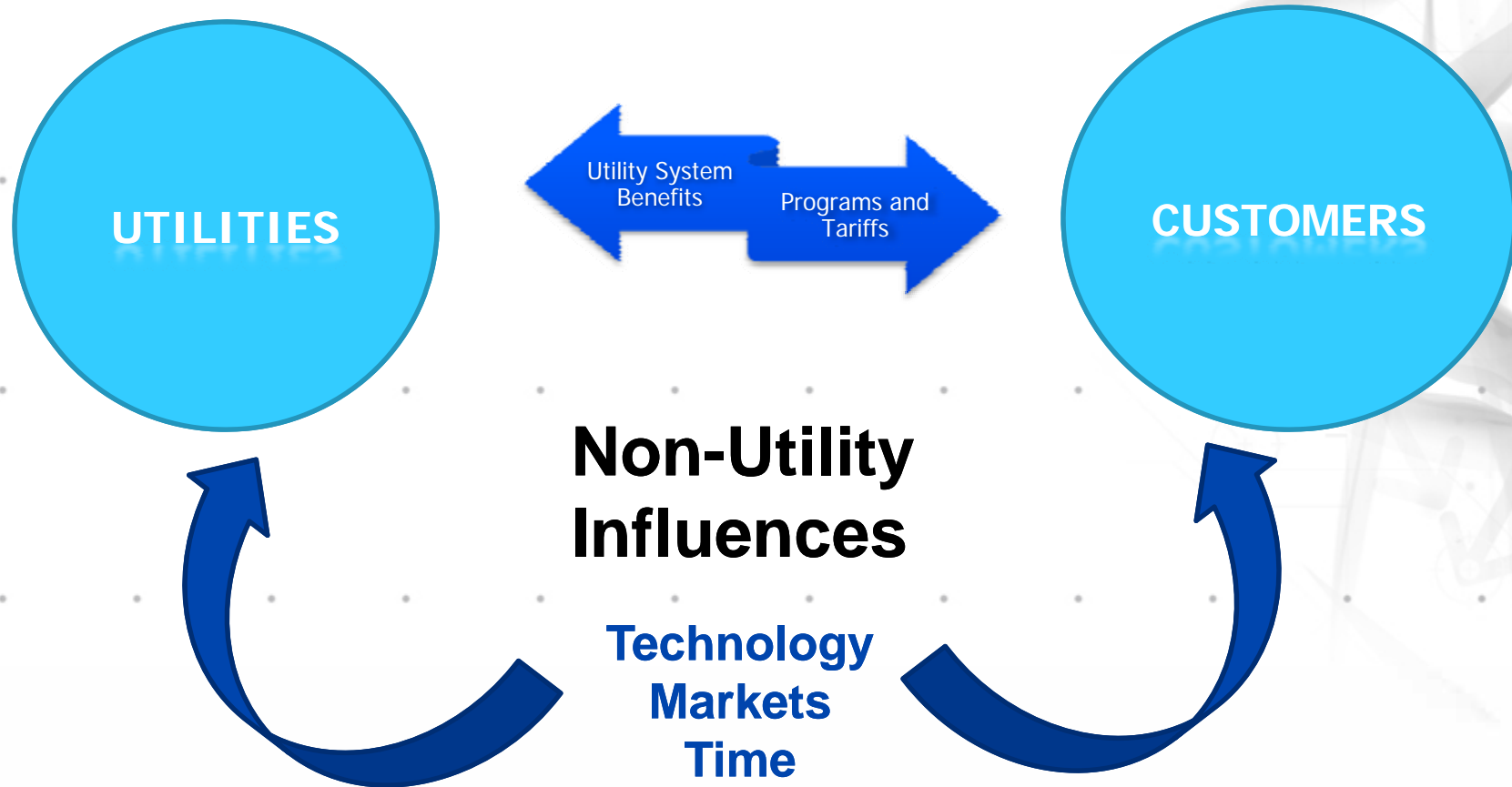
iDSM – A Customer View

there's an app for that



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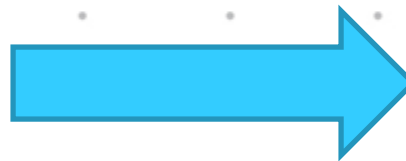
iDSM – A Utility View



Regulatory View

In addition to its other benefits, iDSM can reduce the number of regulatory proceedings and harmonize cost effectiveness analysis and M&V

Rates
Demand Response
Energy Efficiency
Supply Metering
DG Metering
EM&V



iDSM



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Fundamental Changes

- **Stovepipes are broken down**
 - Analyze iDSM options equivalent to power supply, transmission, distribution *and at the same time*
 - Traditional approaches will change
- **A two-way grid**
 - More akin to a computer network than a pipeline
 - Optimize customer and utility options
 - Leverage technology and economic signal synergies
- **iDSM lead to a more resilient utility system**
 - Shorter term adaptation
 - Faster decisions and technology cycles
 - A learning and adapting utility environment



Many Complex Issues

- **Regulatory decisions**
- **What is the role of the non-utility market?**
- **Program structures work against integration**
 - Statewide programs with specific charters
 - Utility programs with specific regulatory boundaries
- **Wholesale power markets vs retail markets**
- **Evaluation, Measurement and Verification**
 - Protocols
 - Widget approach vs system approach
 - Assigning credit



Does iDSM Benefit Utilities?

- Expanded window on customer needs and preferences
- New investment opportunities
- New ways to engage with customers
- An integrated approach to managing and serving loads
- Shorter term planning horizons and plan adjustments



Early Efforts are Emerging

- **GDS is working in PA to address integration issues *within* the DR market**
 - PA Act 129 requires utilities to achieve a 4.5% reduction in peak load by 2015
 - But non-utility market is responding to PJM DR price signals
 - Utilities promote their own DR programs
 - Customers can use both or either, often referred by a utility
 - Markets and utilities are competing for and sharing the same load
 - How to avoid double counting and address attribution issues for Act 129 compliance?
 - Integration issues cross RTOs, legislative mandates, the utilities and market actors



Wrap-Up

- **California is taking the challenge head on**
- **Other states are managing their own processes**
- **In our next two presentations we will learn more from each of early efforts at iDSM**
- **The context and process will likely vary from region to region.**
- **Your markets likely experience issues related to non-iDSM in their own unique ways**
- **These early efforts will shape and guide the future for DSM**



Thank You!

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GDS Associates, Inc.
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“Integrated Demand-Side Management: Developments and Early Lessons”

California Update

AESP Brown Bag

May 2012

Mark S. Martinez, SCE

What is IDSM?

- There are many definitions of IDSM
 - IDSM Department = utility organization
 - IDSM Catalog = tool for customers
 - IDSM Measure = technology with EE and DR features

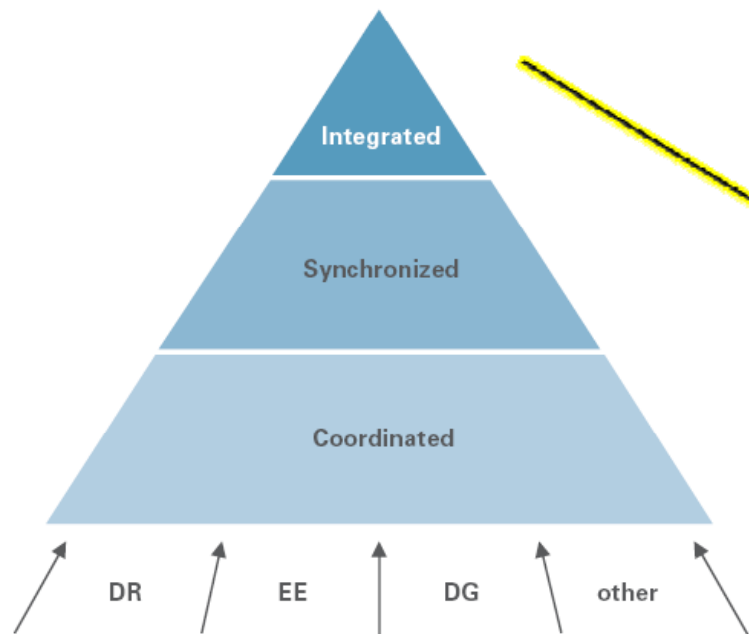
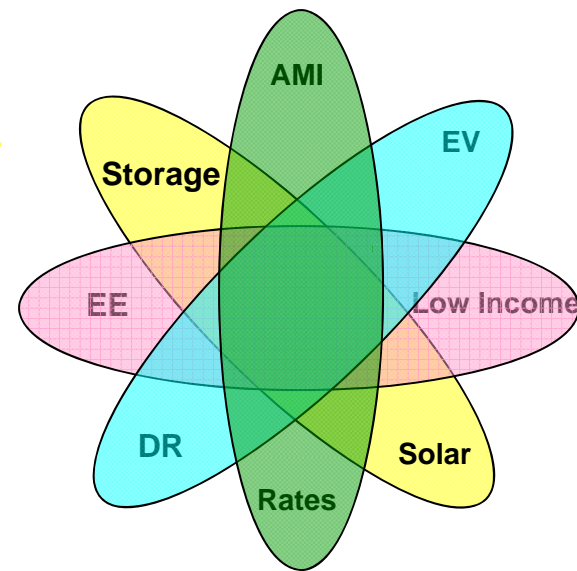


Figure 15. Varying Levels of Customer Solutions Within the IDSM Framework



IDSMS as a Regulatory Policy

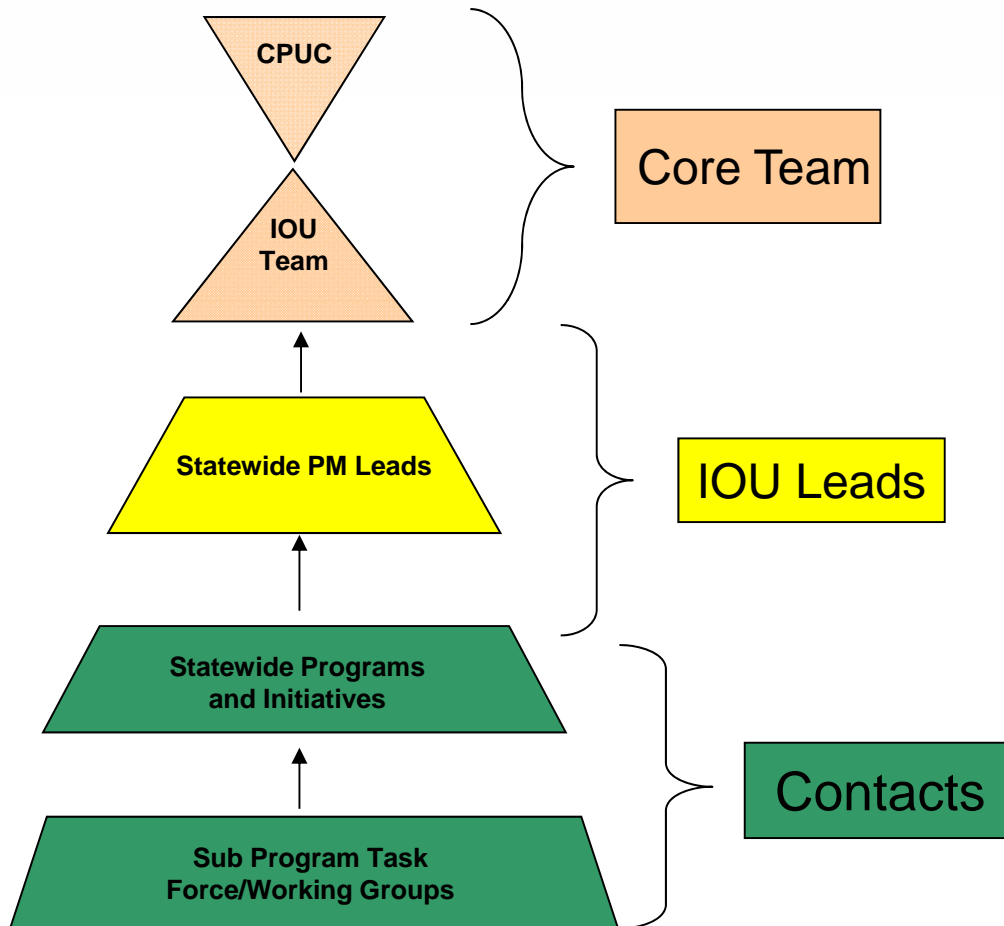
- The California Long Term Energy Efficiency Strategic Plan (CLTEESP) highlighted DSM program integration as a strategic planning priority for 2008 onward.
 - *Vision: Energy efficiency, energy conservation, demand response, advanced metering, and distributed generation technologies are offered as elements of an **integrated solution***
- The CPUC directed the IOUs to include IDSMS program offerings to customers with:
 - Energy Efficiency, Demand Response, California Solar Initiative and Distributed Generation = IDSMS
 - Via all delivery channels, such as Low Income Energy Efficiency, Mass Markets and Target Markets
 - Combine integrated marketing and sales, audits, incentives, programs.

Statewide Integration Task Force

- The **Statewide Integration Task Force** was established to provide coordination of all IOU IDSM activities in 2010
- The Task Force is made up of:
 - SCE, Sempra (SDG&E and SoCal Gas), PG&E, CPUC
 - Other IOU and ED SME leads and contacts support as needed
- The Task Force is tasked with the **delivery of CPUC IDSM strategies** and statewide tasks in accordance with the IDSM PIP
 - biweekly phone calls with only IOUs and separate biweekly phone calls with the Energy Division representatives
 - Meetings with ED in person on a quarterly basis following the filing of the quarterly report and with sub teams as needed

Statewide IDSM Task Force - Roles

Purpose, function and accountability



IDSM Core Team: Bi-Weekly

- Utilities and Energy Division work collaboratively as a core group to meet compliance and resolve issues.
- Bi-weekly meetings of SCE, PG&E, SDG&E, and Energy division.
- Facilitate updates, reporting, and statewide efforts on a regulatory basis.

IDSM Leads: Quarterly

- Responsible to review and resolve the major issues escalated by the IDSM Core Team.
- Provides technical input and/or resolution on IDSM policy compliance issues.

Statewide Programs: As needed

- Responsible for program implementation, reporting of IDSM activities and managing the portfolios.
- Resolves the major issues escalated by the CSBU regulatory teams.

Sub Program Task Force: As needed

- Responsible for execution of assigned EE, DR, CSI, etc activities in accordance with regulatory guidance.
- Update application project plans to reflect latest IDSM proceedings, filings, and milestones.

Key IDSM Activities for California

As defined by Joint IOU Advice Letter Filing dated March 10, 2010

1. Development of a proposed method to measure **cost-effectiveness** for IDSM programs
2. Development of proposed **measurement and evaluation** protocols for IDSM impacts (kWh and kW)
3. Review IDSM enabling **emerging technologies** for potential inclusion of integrated technologies in integrated programs (road map)
4. Development of cross-utility standardized on-line **integrated audit tools** using PG&E's developed audits as a starting point

Key IDSM Activities for California (cont'd)

5. Track **integration pilot programs** to estimate energy savings, develop best practices and lessons learned practices that can be applied to future programs
6. Develop **regular reports on IDSM progress** and recommendations to the Commission for best practices
7. Organize and oversee internal utility IDSM strategies by establishing **internal Integration Teams** with staff from EE, DR, DG, and marketing
8. Provide feedback and recommendations for the utilities' **integrated marketing campaigns** including how the working group will ensure that demand response marketing programs are coordinated with EE marketing efforts.



1. Integrated Cost Effectiveness

- New statewide effort is underway to develop **cost-effectiveness for integrated projects** and programs
- This is fundamental to developing IDSM programs
 - What are the mutual benefits? How to attribute costs?
- The IDSM Task Force launched a phased approach by first **developing a whitepaper** to identify existing CE methods and possible future methodologies.
 - Phase 1 – White Paper contracted to Black and Veatch
 - Phase 2 – Identify road map for framework development
 - Phase 3 - Framework to be developed and tested on the DR pilot programs (2012)

2. Integrated M&V Protocols

- The CPUC has directed the IOUs to develop a proposed framework for **integrated EM&V protocols** for IDSM programs and projects.
- The Task Force plans to conduct a phased approach to developing appropriate EM&V protocols for IDSM programs and projects (following the CE process).
- Significance:
 - EM&V is conducted differently in different proceedings and has more significant impacts with Energy Efficiency given the shareholder incentives
 - DR has its own protocols for the M&V of load impacts
 - Developing one integrated methodology will present significant challenges for measure attribution and sequencing
- Currently **on hold** pending cost effectiveness resolution

3. Review Emerging Technologies

- The CPUC wants to actively **review EE and DR enabling emerging technologies** for potential inclusion of IDSM technologies in integrated programs.
- The IOUs and the Task Force group are **actively tracking emerging technologies** that integrate EE, DR and / or DG
- Significance
 - CPUC wants the ratepayer investments in ET efforts to be realized as the transfer of enabling technologies for dynamic pricing and renewable policy goals into programs
 - In addition to the increased reporting that Emerging Technologies receive for annual reports, measure integration and market transformation are also to be identified quarterly

4. Development of Integrated Audits

- The CPUC directed the IOUs to develop a cross-utility standardized **integrated audit tool** using PG&E's developed audits as a starting point.
- The IOUs are coordinating on a SW basis to deliver an integrated on-line audit tool
- On-site audits are a separate but significant activity that need statewide coordination between IOUs
- Significance:
 - The CPUC staff is taking highly focused interest in this effort and the need for IOUs to coordinate audits on a SW basis
- **Customer benefits and cost savings is a prime mover**

5. Track Integrated Pilot Programs

- The IOUs are to **track and report on their integrated pilot programs** to estimate energy savings, develop best practices and lessons learned and to develop standard integration best practices
- The IOUs have begun tracking integrated pilot program efforts internally and with other IOUs in the Q reports.
- Significance:
 - The IDSM pilot programs are the **“testing ground”** for the development of future IDSM program designs, CE and M&V
 - High visibility by CPUC in actually delivering what was promised in the integrated testimony and their expectations for results
- SCE has multiple IDSM pilots in the works in 2012

6. Develop IDSM Progress Reports

- The IOUs are to **track and report on IDSM activities** on a regular basis and to identify and share best practices
- The Task Force has been delivering quarterly reports – the IDSM advice Letter sets the frequency and scope
- Bi-weekly conference calls, quarterly in person meetings at CPUC, and sub team meetings as needed.
- Significance:
 - This process is continuous and reflects the CPUC's strong interest in understanding how IDSM is being implemented
- Current evaluation of the IDSM activities in 2011 is underway by the CPUC and their consultant

7. Develop Internal IDSM Teams

- The CPUC directed the IOUs to **set up internal integration teams** with IOU staff from EE, DR, DG, LIEE, Marketing and Delivery channels such as Account Reps and 3P/GP
- Internal awareness and understanding of IDSM along with training and education for internal IOU staff are needed
- Significance:
 - All utilities have established internal governance teams
 - Also there are sub teams along the various directives – Emerging Tech, Audits, Marketing and Efforts (training, projects, pilots) – to better coordinate internally to consider best practices



8. Integrated Marketing

- The CPUC directed the utilities to provide feedback and recommendations from the IOUs integrated marketing campaigns
 - ED is critical of IOU “integrated” efforts and is micromanaging
 - Engage360 an example of CPUC “partnership” of messaging
- The IOUs are **tracking & reporting integrated marketing efforts**, including campaigns, web and collateral
- Significance:
 - This presents an excellent opportunity to see what approaches are working and not working for other utilities Statewide
- Multiple case studies are in evidence for EE/DR



How do improve IDSM?

- **More coordination** / communication needed on Audits
 - What are the cost savings? How to drive program tracking?
- **Need for more engagement** to reboot the current IDSM Cost Effectiveness development effort
- **Opportunity to kick-off the EM&V** study to drive this process as a white paper study in 2012
- **Documenting** marketing collateral and approaches should present opportunity for sharing best practices
- **Pay attention** to what other IOUs are doing well to learn from their successes – We can all share
- **Be proactive** in implementing integrated efforts, activities and projects that should be showcased



For more information:

California EE Strategic Plan

http://www.energy.ca.gov/ab758/documents/CAEnergyEfficiencyStrategicPlan_Jan2011.pdf

CPUC Statewide Integration Fact Sheet

<http://www.cpuc.ca.gov/NR/ronlyres/E3CC4C42-6E3B-4063-B584-C345D2338475/0/17StatewideIDSMPProgram0710.pdf>

IDS M Cost Effectiveness White Paper

[http://www.calmac.org/publications/IDS M Final White Paper 12May2011.pdf](http://www.calmac.org/publications/IDS_M_Final_White_Paper_12May2011.pdf)

Thank You!

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The Maryland Public Service Commission

IDSMS: Lessons Learned in Evaluation

Crissy Godfrey, Director, Energy Analysis & Planning
Maryland Public Service Commission

May 3, 2012

*The opinions expressed by Ms. Godfrey do not necessarily reflect the views of the Maryland PSC.

EmPower Maryland Energy Efficiency Act

- Enacted in April 2008 (PU § 7-211)
- Bold initiative to reduce the State's energy consumption 15% by 2015
 - At least 5% by 2011, 10% by 2015 (with 5% from MEA) per capita energy reductions and 15% demand reductions
- Multi-faceted approach: Cost-effective energy efficiency and conservation programs including EE&C, demand response, distributed generation and advanced metering infrastructure
- Designed to:
 - Stave off potential rolling blackouts as early as 2011
 - Reduce energy bills
 - Protect our environment and reduce global warming pollution
 - Create new Maryland businesses
 - Build sources of clean, reliable energy for Marylanders
- § 7-211(g)(1) – requires projected and verifiable electricity savings in achieving targets
- (Summer 2009) BGE and PEPSCO filed full-scale smart grid roll-out plans
 - \$775 MM on smart grid rollout, roughly 2.9 million endpoints (3 yr period)
 - Biz case includes value of energy and peak savings from new DR, in home feedback and customized energy insight reports

Scale of EmPower Maryland

- 2009 – 2011 EmPower Portfolios approved between Dec '08 and Aug '09
 - \$565.5 Million in EE & DR Programs
 - 894 MW, 3.16 million MWh in reductions
 - 2.6% allocated for EM&V (average, only Utilities EM&V Contractor); none for DR
- (Summer 2009) BGE and PEPCO filed full-scale smart grid roll-out plans
 - \$775 MM on smart grid rollout, roughly 2.9 million endpoints (3 yr period)
 - Biz case includes value of energy and peak savings from new DR, in home feedback and customized energy insight reports

Meaning of Integrated DSM in Maryland

IDSM = Process of integrating the evaluation of energy efficiency, demand response, dynamic rates and smart grid enabled technologies

Leading Factors to MD's EM&V Approach

- PSC has little institutional knowledge on EE/DR
- Need for transparency/consistency in reporting to the General Assembly, ratepayers and public
- Utilities did not want to give up direct management of EE EM&V
- Little consistency in Utilities' DR Program EM&V activities, most DR EM&V managed in-house or with DR contractors
- Reviewed “best practices” nationwide (e.g., WI, CA)
- No existing EM&V structure or basis
- Broader public policy & stakeholder concerns (e.g., environment, jobs, NEEP EM&V Forum or other market assessment studies)
- Commission approved Independent Evaluator model, and included EE & DR together in EM&V process (Aug 09)

PSC-Led Evaluator EM&V Process

- Utilities maintained a Statewide EM&V Contractor
 - Develops/implements Impact & Process Evaluation Plans
 - Conducts Primary Data collection
 - Prepares utility-level data reports/analyses and maintains tracking database
- Independent, 3rd party EM&V Evaluator (PSC-Led)
 - Dovetailed EE and DR EM&V work under Evaluator
 - NEEP EM&V Forum (inc. TRM) into EM&V process with Utilities & PSC
 - Reviews Utility Impact & Process Evaluation Plans & Master Schedule
 - Prepare/implements Due Diligence Impact & Process Evaluation Plan
 - Prepares State-wide Due Diligence data reports/analyses and maintains tracking database
 - Analyses of state-wide EM&V best practices, broader policy, and potential ad-hoc workshops

Key EM&V Milestones

Key Dates	Deliverables
June 14, 2010	Draft Strategic Evaluation Plan
Aug 15, 2010	Final Evaluation Plans (Navigant will stagger high and low priority programs)
Dec 1, 2010 and Jan 15, 2011	Draft and Final Statewide Evaluation Report of 2009-2010 Program Savings (Navigant) ²
Jan 10, 2011 and Feb 15, 2011	Draft and Final Verification of 2009 and 2010 Statewide Program Savings Report (Itron)
Jan 30 annually	Utility Programmatic Savings Reports - Includes reported and verified savings for previous program year (e.g., 2010 programs for the Jan 30, 2011 report)
March 1, 2011	EmPOWER progress report to State General Assembly
March 15, 2011	Utilities submit cost-effectiveness analysis for major programs and the entire portfolio for program years 2009, 2010, and 2011 program years.
May 1, 2011	Post-Installation Report to PJM for program savings bid into the market ³
May 1 annually	Final Process Evaluation Results and Recommended Design Changes – interim results to be provided to utilities throughout the year

General EM&V Challenges

- Lots of work to do
 - developing priorities, guidelines
 - right balance & timing of studies
- Condensed timeframe
- Developing trust
- Resources to meet the needs
- Gas/Electric integration
- Multiple stakeholders
- Consistency in definitions, methodologies, even incentives

Evaluation Challenges for IDSM in MD

- **Several of the Empower Programs MW and MWh savings are bid into the PJM capacity markets**
 - PJM has its own EM&V Manual and documentation reqs (e.g., primary evaluation)
 - Conflicts with NEEP Mid-Atlantic TRM Manual
- **Regulatory “silos”: DR, Smart Grid, CVR**
 - Preventing overlapping of program savings estimates (e.g., DLC programs, Smart Grid, behavioral programs)
 - Smart Grid Work Group developing metrics on energy savings, coordination of methodologies to ensure no double counting
 - Variation in biz case approaches: DR and Smart Grid (price mitigation)
 - Varying levels of technology development: OPower marketing versus energy web portals; AMI-CVR versus manual CVR
- **EmPower Maryland Accounting of Savings**
 - Struggle to verify savings in Programs in other Case filings, applied directly to EmPower bottom line

2011 EmPOWER MD Results*

		2011 EmPower Maryland Goal		2015 EmPower Maryland Goal	
		<i>MW</i>	<i>MWH</i>	<i>MW</i>	<i>MWH</i>
PE	Forecasted	49.4	122,664	21	415,228
	Reported	18.253	103,527	18.253	103,527
	% Complete	37%	84%	87%	25%
BGE	Forecasted	513	2,052,948	1267	3,593,750
	Reported	704	895,301	704	895,301
	% Complete	137%	44%	56%	25%
DPL	Forecasted	73	205,846	18	143,453
	Reported	32.207	52,582	32.207	52,582
	% Complete	44%	26%	179%	37%
Pepco	Forecasted	230	685,378	672	1,239,108
	Reported	136.075	289,931	136.075	289,931
	% Complete	59%	42%	20%	23%
SMECO	Forecasted	29	94,229	139	83,870
	Reported	52.28	60,410	52.28	60,410
	% Complete	180%	64%	38%	72%
Total	Forecasted	894	3,161,065	2,117	5,475,409
	Reported	942.82	1,401,751	942.82	1,401,751
	% Complete	105%	44%	45%	26%

*Verified savings for 2009-2010 and reported 2011 energy and demand savings for EE & DR Programs



Thank You!

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QUESTIONS

Type Your Questions in the Chat Box



Save the Date

May 15-17, 2012

AESP's Spring Conference
Baltimore, MD

Jul. 30-31, 2012

AESP's Summer Conference
Toronto, ON (Canada)

Oct. 15-17, 2012

AESP's Fall Conference
Long Beach, CA

Jan. 28-31, 2013

AESP's 23rd National Conference & Expo
Orlando, FL

