

Colorado Springs Utilities Demand Side Management & Renewable Energy Presentation for 19th Annual SWEEP Workshop

November 21, 2013

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Agenda

- Colorado Springs Utilities (CSU) Overview
- CSU's DSM & RE Section Snapshot
- 2006-2012 Results; 2013 Goals
- 2013 DSM & RE Programs Overview
- 2014 DSM & RE Programs Preview
- New Developments - Energy Vision 2020 Goals
- Key Challenges
- Questions

Colorado Springs Utilities (CSU)

- Four service municipal utility
 - Electric, Natural Gas, Water, Wastewater Services
- ~230,000 customers; >600,000 meters
- 904 MW Peak (6/2012); 4.6 billion in kWh sales
- Home Rule Municipality
 - Regulator is Colorado Spring City Council & Colorado Springs Utilities Board
 - Not subject to CO Public Utilities Commission jurisdiction
- 1,800 employees; \$1.1 billion annual budget

CSU DSM & RE Section

- CSU established energy DSM section in 2005
- DSM Section responsibilities include:
 - DSM electric demand (MW) & energy (MWh) goals
 - Renewable Energy MW & MWh goals
 - Natural gas energy (Mcf) goals
 - Colorado Renewable Energy Standard compliance
 - Colorado Springs Energy Vision 2020 goals
- Six full time employees
- Manage 32 different rebate/incentive programs
- Part of long term resource planning department

2006-2012 Electric DSM Results and 2013 Electric DSM Goals

Year	MWh	MW	DSM Cost	RE Cost	Total Cost
2005	5,145	4.67	\$953,947	\$0	\$953,947
2006	7,296	4.65	\$1,753,381	\$193,408	\$1,946,789
2007	9,297	5.72	\$1,522,335	\$171,966	\$1,694,301
2008	16,575	8.11	\$2,250,772	\$384,780	\$2,635,552
2009	20,371	8.24	\$1,900,224	\$818,804	\$2,719,028
2010	18,738	7.84	\$1,956,691	\$778,339	\$2,735,030
2011	22,745	9.27	\$1,943,710	\$2,130,089	\$4,073,799
2012	40,328	11.66	\$2,569,235	\$1,924,336	\$4,493,571
2013	43,879	14.57	\$3,348,070	\$1,433,924	\$4,781,994

Note: 2006-2008 costs include labor, benefit, incentive/rebate, administrative and marketing expenses. 2009-2013 costs include labor, benefit, incentive/rebate and administrative expenses.

2006 - 2012 Solar PV Rebates

Year	2006	2007	2008	2009	2010	2011	2012
Solar PV Systems Installed	21	17	20	31	35	82*	53**
Average Cost Per Watt	\$8.92	\$9.03	\$9.85	\$9.22	\$6.65	\$6.85	\$5.09
Average Cost Post Rebate Per Watt	\$4.92	\$5.28	\$6.10	\$5.54	\$3.68	\$4.86	\$3.77
Total Kilowatts (kW) Installed	47.2	44.7	102.6	245.0	263.0	565.5	480.0
Rebate Level Per Watt	\$4.00	\$3.75	\$3.75	\$3.75	\$3.00	\$2.00	\$1.80
Total Rebates Paid to Customers	\$188,788	\$167,453	\$384,780	\$818,804	\$778,339	\$1,131,053*	\$863,930**

•*82 RERP installations (71 Res & 11 Bus) and 2,508 solar panels leased (503 kW) from CSG Program. CSG incentives paid were \$995,676. Total solar PV rebates/incentives paid was \$2,126,729.

•**53 RERP installations (41 Res & 12 Bus) and 2,646 solar panels leased (937 kW) from CSG Program. CSG incentives paid were \$1,008,150. Total solar PV rebates/incentives paid was \$1,872,080.

•The 2013 budget for the Renewable Energy Rebate Program is \$613,710 and the Community Solar Garden Program budget is \$750,000. Total 2013 budget for solar PV is \$1,363,710.

2013 DSM & RE Programs

- 21 Electric DSM & RE Programs
- 11 Natural Gas DSM & RE Programs
- Goals
 - 14.57 MW
 - 43,879 MWh
 - 152,186 Mcf
- Budget
 - \$6,004,420 (Electric & Natural Gas)

CSU DSM & RE Programs

- Business DSM & RE Programs
 - Bus Peak Demand Rebate
 - Bus Lighting Rebate
 - Bus Synchronous Belts & Pulleys Rebate
 - Bus Evaporative Cooling Rebate
 - Bus High Efficiency Air Conditioner Rebate
 - Bus Package Terminal Air Conditioner Rebate
 - Bus Electrically Commutated Motor Rebate
 - Bus Occupancy Sensor Rebate
 - Bus Builder Incentive Program Rebate
 - Bus Renewable Energy Rebate Program

CSU DSM & RE Programs

- Business DSM & RE Programs
 - Bus Wind Rebate
 - Bus Solar Thermal Systems Rebate
 - Bus Window Rebate
 - Bus Large Multi-Family Window Rebate
 - Commercial Air Conditioning Load Cycling Program
 - Bus CFL Promotional Program
 - CFL Exchange Program
 - Solar Leasing Program
 - Community Solar Garden Incentive

CSU DSM & RE Programs

- Residential DSM & RE Programs
 - Res Wind Rebate
 - Res Renewable Energy Rebate Program
 - Res Insulation & Air Sealing Rebate
 - Res Duct Sealing Rebate
 - Res Window Rebate
 - Res Multi-Family Window Rebate
 - Res Solar Domestic Hot Water Rebate
 - Electric Efficiency Product Promotion (CFL's)
 - CFL Exchange Program
 - Res Air Conditioning Load Cycling Program

CSU DSM & RE Programs

- Residential DSM & RE Programs
 - Res Dishwasher Rebate
 - Res Furnace Rebate
 - Res Boiler Rebate
 - Res Showerhead Markdown
 - Home Efficiency Assistance Program
 - Community Solar Garden Incentive

CSU DSM & RE Special Projects

- Special projects:
 - Distribution Circuits Project
 - CSU Lighten the Load Conservation Project
 - Expanded Community Solar Gardens Incentive (2 MW in 2014)
 - Water Load Shifting Through Pump Scheduling Optimization
 - Volt VAR (on electric distribution system)
 - CSU Wind Purchase (~13 MW in 2013; more before 2017)

2014 DSM & RE Program Preview

- 22 Electric DSM & RE Programs
- 11 Natural Gas DSM & RE Programs
- Goals
 - 11.57 MW
 - 49,695 MWh
 - 103,280 Mcf
- Budget
 - \$7,946,537 (Electric & Natural Gas)
- Increased focus on business lighting; solar gardens

New Developments

Colorado Springs Energy Vision

By 2020, Colorado Springs Utilities will:

- provide 20% of its total electric energy through renewable sources*;
- provide opportunities to achieve efficiencies with the goal of reducing average electric use by 10%; and
- maintain a 20% regional cost advantage.

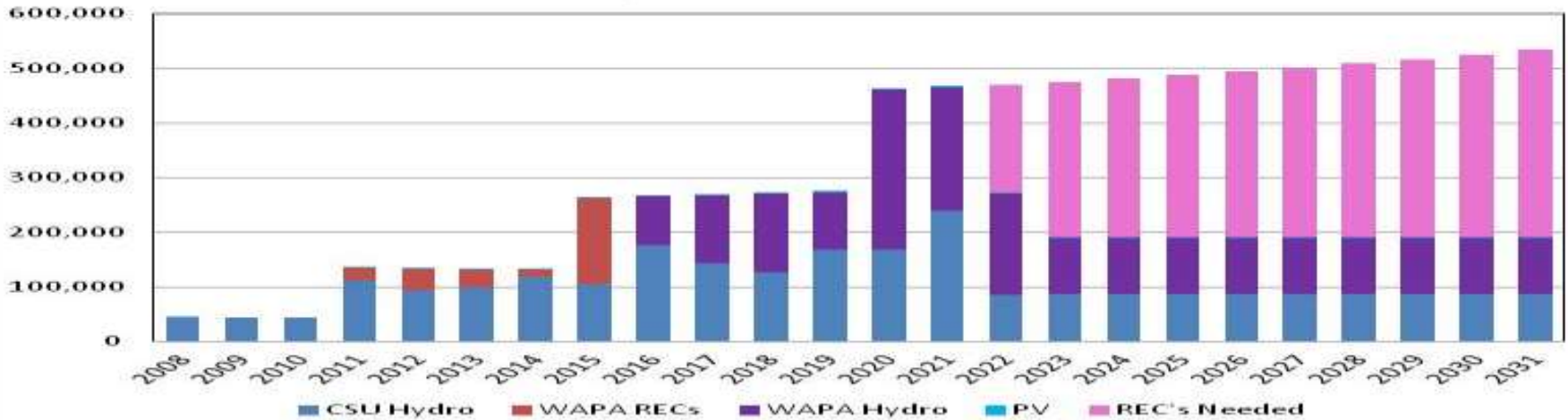
*Qualifying renewable sources as defined by the Colorado Renewable Energy Standard (CO RES)

Colorado Renewable Energy Standard (CO RES)

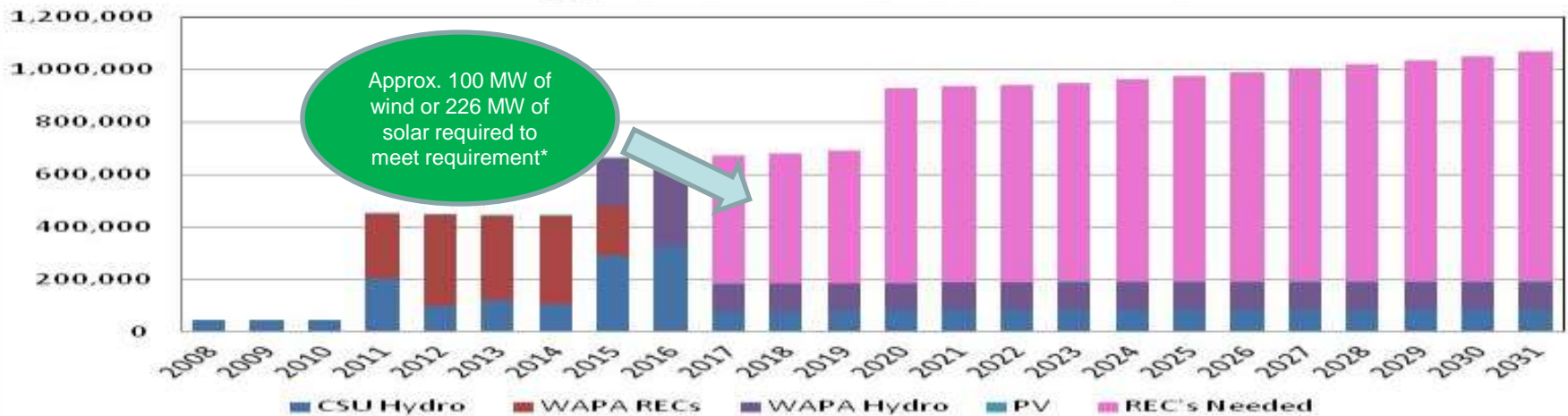
Compliance Year	2008 – 2010	2011 – 2014	2015 – 2019	2020 and thereafter
Current CO RES Municipal Compliance Percentage	1%	3%	6%	10%
CSU Energy Vision Voluntary Compliance Percentage	1%	10%	15%	20%
Current CO RES Investor Owned Utility Compliance Percentage	5%	12%	20%	30%

CSU is voluntarily doubling its commitment to renewable energy. CSU budgets 1% of annual compliance amount to fund customer-side distributed generation programs.

CSU RES Compliance - 10% RES Mandate



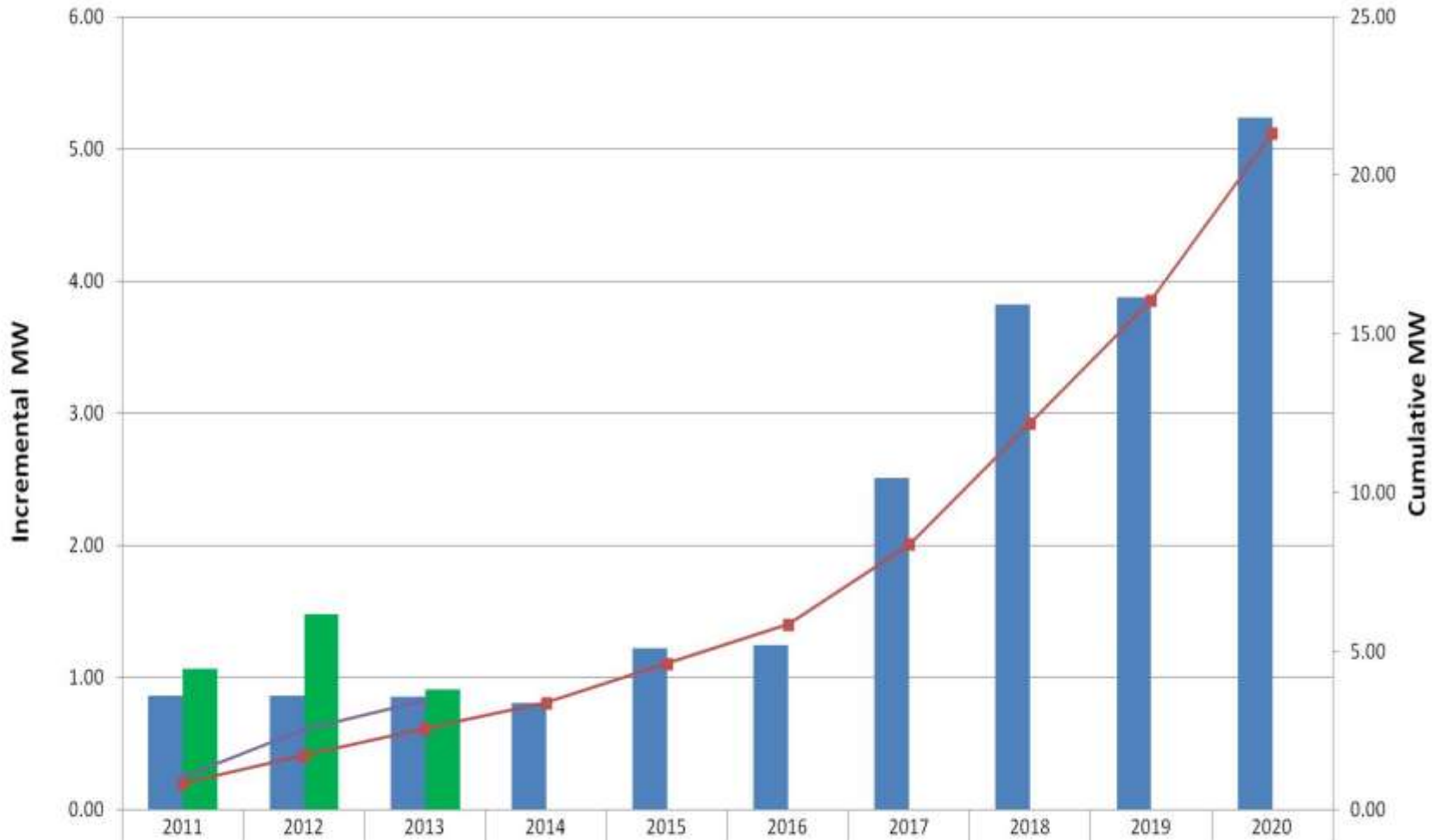
CSU Energy Vision - 20% RES Mandate



Approx. 100 MW of wind or 226 MW of solar required to meet requirement*

* Capacity Factor: Wind at 45% and Solar at 20%

2011-2020 Solar PV Actuals and Targets - Energy Vision & 1% Distributed Generation



MW Target Savings (Incremental)	0.86	0.87	0.86	0.81	1.22	1.24	2.51	3.83	3.88	5.24
MW Actual Savings (Incremental)	1.07	1.48	0.91							
MW Target Savings (Cumulative)	0.86	1.73	2.59	3.40	4.62	5.87	8.38	12.21	16.09	21.32
MW Actual Savings (Cumulative)	1.07	2.55	3.45							

Energy Vision 20% by 2020 Renewable Energy Goal

CSU's 2012 Electric Integrated Resource Plan (EIRP) will determine what supply-side renewable energy will be added to CSU's portfolio in the future.

Most likely biomass, wind, and/or solar

Proposed Energy Vision 10% Average Energy Reduction by 2020

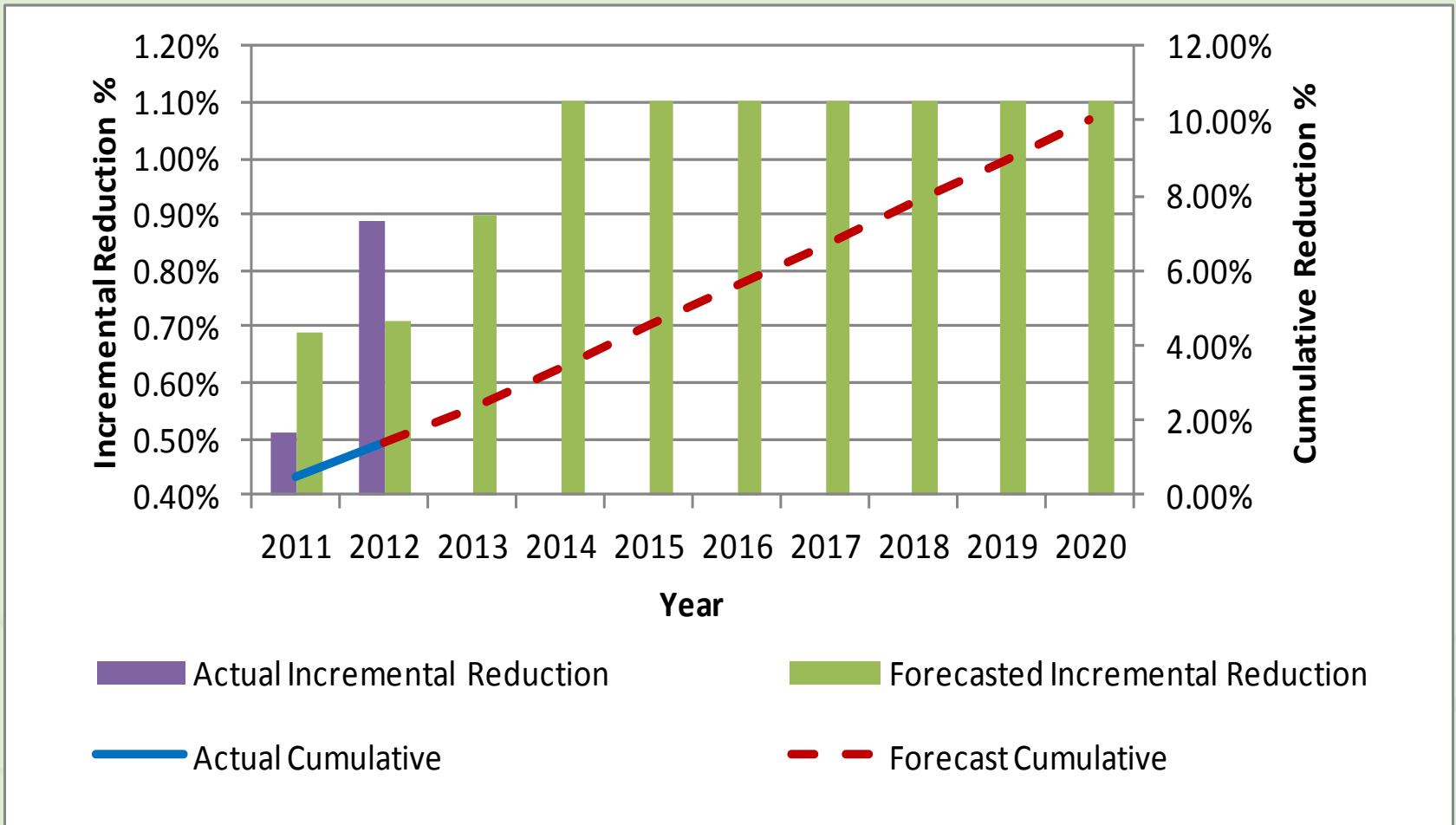
Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Incremental Energy Savings (MWh)	31,169	31,603	40,233	49,260	49,392	50,129	50,695	51,426	52,315	53,019
Cumulative Energy Savings (MWh)	31,169	62,751	102,960	152,196	201,564	251,666	302,329	353,721	405,998	458,975
Incremental Demand Savings (MW)	7.34	7.38	9.22	11.14	11.28	11.41	11.63	11.90	12.19	12.44
Cumulative Demand Savings (MW)	7.34	14.04	22.52	32.91	43.42	53.95	64.59	75.39	86.37	97.49
Incremental Costs (\$M)	2.54	2.93	4.31	6.23	7.59	9.33	11.44	14.06	14.47	15.90
Cumulative Costs (\$M)	2.54	5.46	9.77	16.00	23.59	32.92	44.36	58.42	72.89	88.79
Incremental Reduction	0.69%	0.71%	0.90%	1.10%	1.10%	1.10%	1.10%	1.10%	1.10%	1.10%
Cumulative Reduction	0.69%	1.40%	2.30%	3.40%	4.50%	5.60%	6.70%	7.80%	8.90%	10.00%

Summit Blue DSM Potential

10 Year Annual Average

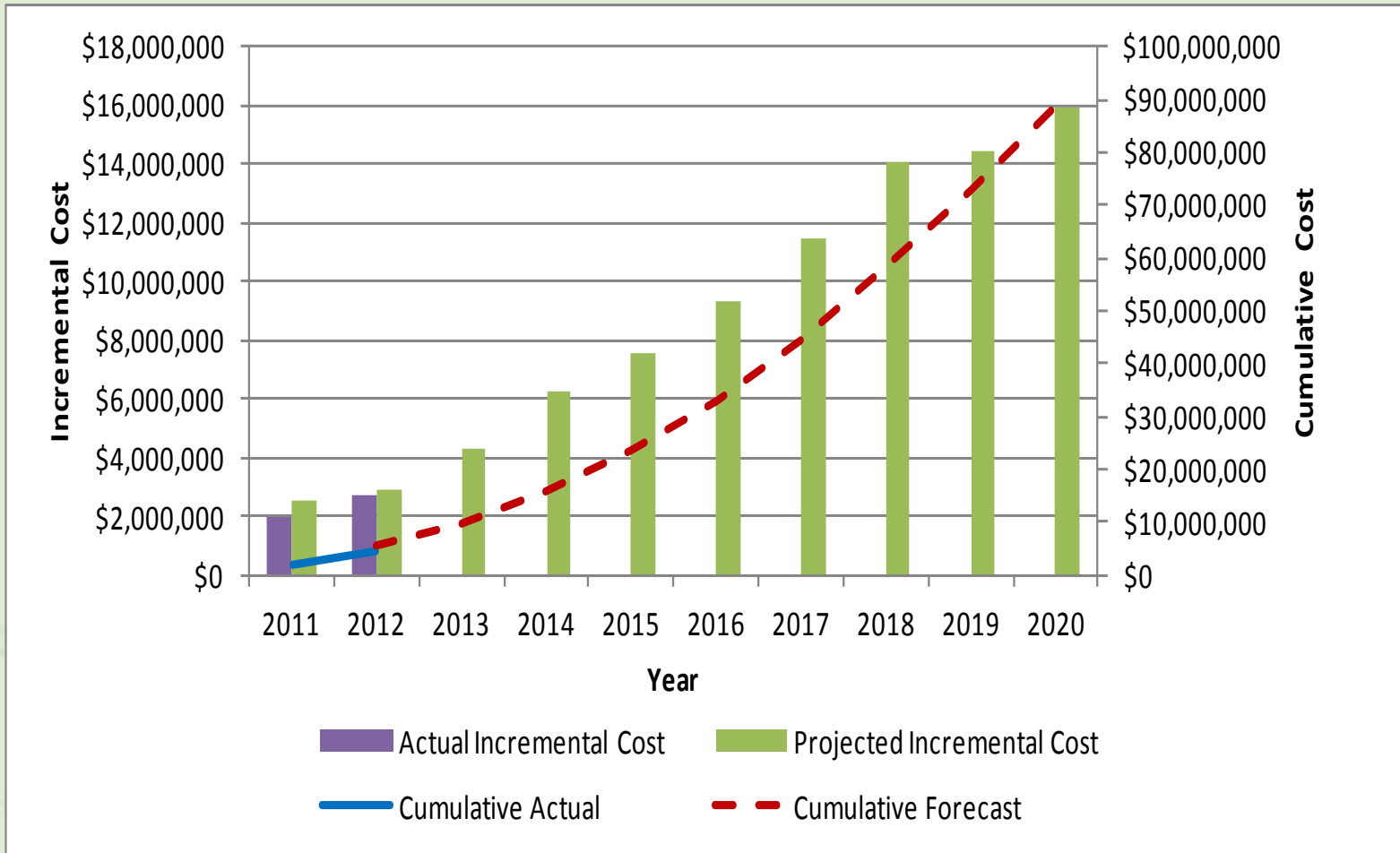
Scenario	Energy Savings as % of Sales	Demand Savings as % of Peak	Costs as % of Revenue
SB High Case	0.75%	1.12%	2.08%
SB Medium Case	0.57%	0.85%	1.54%
CSU 2009	0.45%	1.04%	0.88%
CSU 2010	0.40%	0.95%	0.80%
CSU 2011-2020	1.00%	1.61%	2.45%

10% Reduction in Electric Use by 2020



2013 Goal: 43,879 MWh

Cost of Electric DSM & RE



2013: PV = \$1,363,710 DSM = \$2,874,792; incentive costs only

Regional Cost Advantage Calculation (Example)

Utility	Res kWh's	Com kWh's	Ind kWh's	Residential Power Cost	Commercial Power Cost	Industrial Power Cost
PSCo	600	6,000	400,000	\$64.85	\$574.03	\$32,899.90
MVEA	600	6,000	400,000	\$92.72	\$746.91	\$37,277.50
BHE	600	6,000	400,000	\$103.66	\$952.15	\$45,980.51
CSU	600	6,000	400,000	\$68.22	\$496.20	\$29,433.84
PSCo, MVEA, & BHE Average Power Cost				$(PSCo+MVEA+BHE)/3$ \$261.23/3 = \$87.08	$(PSCo+MVEA+BHE)/3$ \$2,273.09/3 = \$757.70	$(PSCo+MVEA+BHE)/3$ \$116,157.91/3 = \$38,719.30
CSU Regional Cost Advantage				$(CSU \text{ Cost} - \text{Average Power Cost})/\text{Average Power Cost}$ -\$18.86/\$87.08 = -21.65%	$(CSU \text{ Cost} - \text{Average Power Cost})/\text{Average Power Cost}$ -\$261.50/\$757.70 = -34.51%	$(CSU \text{ Cost} - \text{Average Power Cost})/\text{Average Power Cost}$ -\$9,285.46/\$38,719.30 = -23.98%
Ratings				3.00	5.00	4.00
Customer Class Weighting By Sales				37.2%	37.2%	25.6%
Weighted Customer Class Rating				$(3.00 \times 37.2\%) = 1.12$	$(5.00 \times 37.2\%) = 1.86$	$(4.00 \times 25.6\%) = 1.02$
Overall Weighted Rating (Residential+Commercial+Industrial)				$(1.12 + 1.86 + 1.02) = 4.00$ (4.00 after rounding to whole number)		

2013 Target 19.0 – 21.9%		Trend New Indicator Ratings			Benchmark N/A
1	2	3	4	5	
Fails Expectations	Improvement Necessary	Meets Expectations	Exceed Expectations	Superior Performance	
< 15.0%	15.1 -18.9%	19.0 – 21.9%	22.0 – 24.9%	>24.9%	

What is Missing from the Energy Vision 2020?

Colorado Springs Energy Vision 2020 achieves the following goals by the year 2020:

- 20% regional cost advantage (electric only)
 - 1% Retail Rate Impact Limit for RE
- Achieve 20% of its total electric energy through renewable sources
 - 1% of EV Requirement from Distributed Generation Resources
- Provide opportunities to achieve efficiencies with the goal of reducing average electric use by 10%
 - Achieve a reduction of X% in demand

Key Challenges

- Increasing DSM and RE goals without new headcount
- Balancing spending on DSM versus RE
- Drake power plant (fossil fuel) decommissioning study
- Utilities Policy Advisory Committee (UPAC) assignment to recommend changes to Energy Vision 2020
 - Six new City Council members (Apr 2013)
 - DSM & RE tariff rider; 1% DG goal; MW goal; 1% RE annual rate cap
- Budget challenges
 - Scrubbers (SO₂) on fossil fuel units (~\$300M)
 - Southern Delivery System construction (~\$1B)
- 2012 EIRP analysis - no new base load through 2032



Questions