

Final Scientific/Technical Report for DOE/EERE

Project Title: Advancing Energy Efficiency in the Southwest

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Executive Summary

SWEET worked with Energy Efficiency and Renewable Energy (EERE) programs to foster greater energy efficiency throughout the Southwest. SWEET accomplished this through a combination of analysis and support; preparation and distribution of materials on best practice technologies, policies and programs; and technical assistance and information dissemination to states and municipalities in the southwest supporting BTO, AMO, OWIP for advancement of efficiency in products and practices. These efforts were accomplished during the period 2012 through 2017.

Building energy codes advanced in all six southwest states from the majority of states from the 2006 or 2009 IECC to the 2012 IECC and 2015 IECC. Due to the advancement of the energy codes and standards the newest codes provide energy savings greater than 30% from buildings constructed at the beginning of the agreement. With consumers saving from \$2,000 to \$9,000 on newly constructed homes when compared to before period. (Climate specific savings) Utilities across the Southwest have added funding for training and education to support building energy code compliance initiatives and key stakeholders within each state have been brought into the discussion and to continue advancing the benefit of newer energy codes.

In 2012 and 2013 SWEET staff tracked the actions taken by each state government in the region to support the adoption of electric vehicles, and created a [state government scorecard](#) that allowed states to compare their existing policies and programs with state level best practices. SWEET shared the scorecard with state agencies, and also made it available to the public. The report helped spark [friendly competition](#) among states, and helped lead to additional support of EV adoption in Colorado and Utah.

SWEET has made significant contributions to advancing utility strategic energy management (SEM) programs in our region, and raising awareness of SEM among industrial companies in Colorado and Utah. Since July 2013, Rocky Mountain Power in Utah has been offering SEM training and incentives through cohorts and on an individual basis. Due in part to SWEET's continued prodding, Xcel Energy in Colorado now offers SEM to its large customers on an individual customer basis through its "Energy Information Systems" (EIS) program. Xcel Energy has also agreed to develop a pilot SEM cohort program, in response to SWEET's request. Also in response to SWEET's encouragement, two other utilities, Salt River Project (SRP) and Public Service of New Mexico (PNM), are developing "SEM lite" programs for their large customers, a first step towards a more robust SEM offering. In addition to this progress on utility SEM programs, SWEET has helped build awareness of SEM and other best practices in industrial energy efficiency through voluntary recognition and networking programs in Colorado and Utah.

Comparison of Accomplishments

For the building codes program administered by BTO we saw many accomplishments. They include code adoptions, code trainings, and studies performed in the states.

State	Activity	2Q 2012	4Q 2017	
AZ	Energy Codes	2006 IECC	2012 IECC	(1)
	Compliance Studies	0	Residential	(2)
	Training	Ended after ARRA	3 utilities fund training	
	Stakeholders	Reduced post ARRA	Many new stakeholders	
CO	Energy Codes	2009 IECC	2015 IECC	(3)
	Compliance Studies	0	Commercial	
	Training	Minimal	CEO and Xcel	
	Stakeholders		Code Collaborative	
NM	Energy Codes	2009 IECC	2009 IECC	
	Compliance Studies	0	0	
	Training	0	PNM training - 2015	
	Stakeholders			
NV	Energy Codes	2009 IECC	2012 IECC	(4)
	Compliance Studies	1	0	
	Training	0	NVE, SW-Gas 2013-17	
	Stakeholders		Code Collaborative	
UT	Energy Codes	2009 IECC	2015 IECC	
	Compliance Studies	1	0	
	Training	Funded by utilities	Funded by utilities	
	Stakeholders		Collaborative investigation	
WY	Energy Codes	2003/2006 IECC	2012/2015 IECC	(5)
	Compliance Studies	1	0	
	Training	State Energy Office	State Energy Office	
	Stakeholders		Code Officials, ICC	

(1) Homerule state, 70% of AZ construction occurs in communities on 2012 IECC

(2) Utilities APS and SRP and conducting proprietary code compliance studies

(3) Homerule state, over 50% of CO construction occurs in communities on 2015 IECC

(4) Advancing to 2018 IECC in July 2018

(5) Homerule state

Summary of project goals and activities

Since the inception of the contract SWEET has been instrumental in driving energy code advancements and improving compliance through education and studies. The

following accomplishments are significant and not exclusive to all of the accomplishments achieved during this funding period.

1. Arizona municipalities advanced from the 2006 IECC to the 2012 and 2015 IECC with an estimated 70 percent of construction activity in 2017 occurring in communities enforcing the 2012 or 2015 IECC.
2. Colorado municipalities advanced from the 2009 IECC to the 2015 IECC with an estimated 55 percent of construction activity in 2017 occurring in communities enforcing the 2015 IECC.
3. The State of Nevada has adopted the 2012 IECC and is in public hearings in late December 2017 reviewing the 2018 IECC for adoption in July 2018. The state had no statewide energy code when funding started.
4. The State of Utah has adopted the 2015 IECC unamended for commercial buildings with amendments for the residential provisions of the code. The state had adopted the 2009 IECC at beginning of agreement.
5. Key communities in Wyoming have adopted the 2015 and 2012 IECC, all with amendments for residential and commercial buildings.
6. Facilitated two energy code stakeholder collaboratives in Colorado and Nevada.
7. Successful commercial energy code compliance study in Colorado.
8. Development of stakeholder through participation of code committees in Arizona, Colorado, Nevada and Utah.
9. Provided numerous trainings, webinars, and educational materials supporting industry to construct buildings to the newest energy codes.
10. Replicated, where feasible, successful initiatives in the Southwest, from other REEO organizations.
11. Promoted BTO projects for data collection, DOE and PNNL developed materials, distribution of AEDG's to key stakeholders.
12. Developed regionals specific materials such as "Energy Codes are Life Safety Codes" published in "Code Watcher" and "Builder Online" magazines.
In response to SWEET's request, Xcel Energy agreed to develop an SEM cohort pilot program and to "consider" offering a pilot energy manager co-funding program in its DSM plan for 2017-2018
13. Public Service of New Mexico and NV Energy agreed to offer pilot energy manager co-funding programs in their respective 2017-2018 DSM plans, also in response to SWEET's request
14. SWEET delivered a paper and presentation on "Utility SEM Programs from the Southwest," at the 2015 ACEEE Summer Study on Energy Efficiency in Industry
15. We delivered three webinar/discussions on SEM to utilities in our region in the spring of 2016
16. We researched and authored the following additional publications on industrial energy efficiency
 - a. "Utility Strategic Energy Management Programs," March 2013
 - b. "Financing Options for Combined Heat and Power Systems," February 2014

- c. "Energy Manager Co-funding: You Can't Manage without a Manager," January 2016
- d. "Industrial Re-commissioning: Not Just a Building Tune-up," February 2017
- 17. SWEET coordinated and led 13 industrial networking meetings in Colorado from 2013 through 2017
- 18. SWEET coordinated and held annual recognition events for industrial energy efficiency achievements in Colorado in 2013, 2015, September 2016, and May 2017. For each of these, we documented the significant energy savings achievements of program participants. SWEET contributed to these savings through the networking meetings and technical assistance offered. (Our technical assistance, offered through our sub-contractors ETC Group and Colorado State University, ended in 2013).
- 19. Utah, SWEET's partner Utah Clean Energy coordinated annual recognition events for industrial energy efficiency in 2013, 2015, 2016, and 2017, which also included summarizing energy savings of program participants. Utah Clean Energy held approximately 10 networking meetings in this time period