

How Small Town Cooperation Led To Big Statewide Change



Dr. Rosemarie Russo
ISSP
May 14, 2020

Collaboration



- Local level
Engagement with residents & business community
- State level:
City and County (i.e., technical and legal) & state's primary electricity provider – Rocky Mountain Power
- Federal level:
Solar Energy Innovation Symposium (Denver, June 2019)
- International Level
Discover Moab: Sustainability Partners
“Do It Like a Local” Music Video

Sustainable Moab



Trademark

- Outdoor Recreation
- National & State Parks
- Untouched Beauty
- Camping, hiking, rafting, biking, Jeep and UTV trails

Challenge

- 48% kids live below poverty line
- More tourist than Orlando per capita
- Divisive community (non-natives)

Community-Based Social Marketing & Norms



Community Based Social Marketing



- Information-intensive approaches such as bill-stuffers, flyers and direct mail have little likelihood of changing behavior.
- Individuals will engage in behavior if its part of a social norm (i.e. challenge, pledge)
- Pledges should have more than environmental benefits listed (i.e. TBL).
- Public and signed commitments increase participation rates.

FortZED: Take It to Zero



The Atmosphere Conservancy, CW businesses, City staff and students assisted in developing the neighborhood packs.



Community Campaigns



Bike To Work

- 43 stations throughout the community sponsored by schools, non-profits and the business community. Bike mechanics were available at most stations. The City supplied helmets and lights to participants.

Drive Leadership

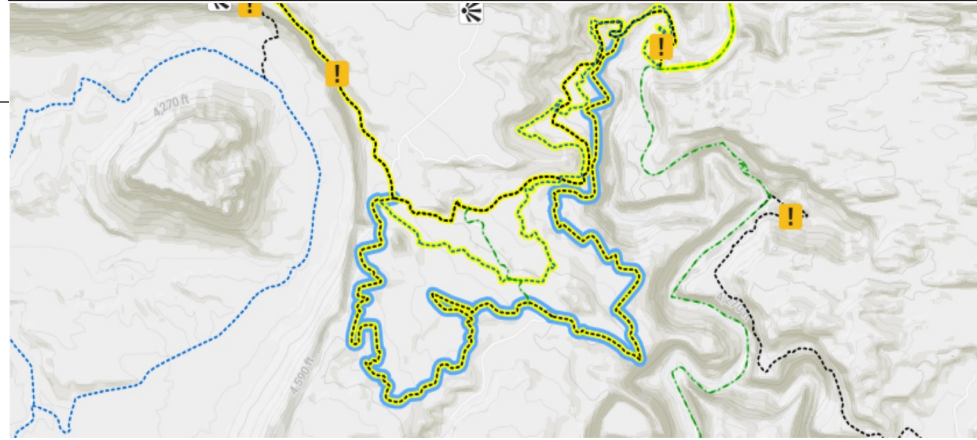
- Campaign showing top leaders such as mayor, university president, pastor etc. driving electric vehicles.
- Neighborhood Ride and Drive Events – Tesla, EV 3, Mitsubishi, Volt, and owners not dealers.

Bikers, Rafterers & Climbers: Guide to Sustainability Options



Options rated A - E
(Excellent to Failing)
comparing sustainability
options to popular
mountain biking, rafting
and climbing routes. City
Council should select and
fund at least six projects
and/or ordinance
amendments annually.

Option A: *Captain Ahab, Cataract Canyon, Free Soloing El Capitan (Yosemite, CA)*
– Steep, Fast Option



Carbon:

- Require Living Building Community Challenge, LEED Platinum or Well Building Certifications for all buildings > 5,000 Square Feet

Energy:

- Require Zero Energy Certification for all buildings and remodels > 5,000 Sq. Feet

Water:

- Install secondary water systems for irrigation.

Recycling:

- Zero Waste Ordinance for all commercial accounts
- Product Responsibility Ordinance

Transport:

- Construct bypass and increase electric vehicle adoption by 30% by 2032

Other:

- Draft Climate Economy Strategic Plan

Local: Empowering the Residential and Business Community



Residential: Incentivize behavior with small refund programs. Examples:

- State Air Grant to get residents to switch to electric mowers and lawn equipment \$25 for purchases of less than \$100 and \$75 > \$100;
- Assisted residents with RMP utility applications for refunds (maneuvering website and data);
- Trailer wrap (Utility needed 50 participants).

Health Connections

Reductions of 2,615 MT of CO₂e (carbon dioxide equivalent) from electricity and natural gas conversion and conservation has significant health benefits.

Air pollution leads to ozone problems and affects asthma and allergy sufferers.

Air pollution avoided:
300 pounds of nitrogen oxide
732 pounds of sulfur dioxide
VOCs



Business Community



- Launched a Sustainability Program Business: Green to Gold (GtG)
- Developed Community Energy Plan in conjunction with Rocky Mountain Power (RMP)
- Database (Baseline & Tracking Carbon emissions from energy, water, trash)
- Piloted RMP's Watt Smart Program



The CW Program has implemented more than 7,400 projects and reduced over 13 million metric tons of CO₂e while saving businesses more than \$92 million dollars.

372 Partners in the program that employ over 38,000 employees ranging from small one- employee businesses to Colorado State University, the the largest employer in northern Colorado.

Networking opportunities to share best practices sponsored by partners (i.e., breweries: sponsored parades/events).



Communications

Different Audience

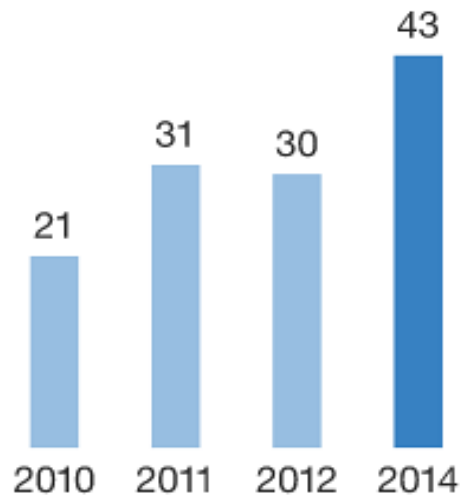


Sustainability Motivation

Top 3 reasons that respondents' organizations address sustainability²

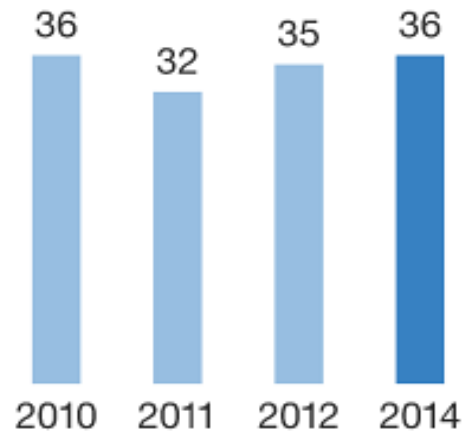
Alignment

Align with company's business goals, mission, or values³



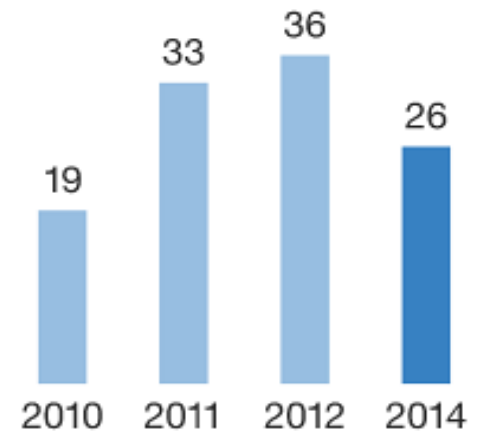
Reputation

Build, maintain, or improve corporate reputation



Cost cutting

Improve operational efficiency and lower costs



¹In 2010, n = 1,749; in 2011, n = 2,956; in 2012, n = 3,847; and in 2014, n = 2,904. The survey was not run in 2013.

²Out of 12 reasons that were presented as answer choices in the question.

³From 2010 to 2012, the answer choice was "Align with company's business goals."

Greenhouse Gas to Saving Green \$\$\$



- Partner recognition,
- Peer bench marketing (i.e., hotels, restaurants, tours)
- Technical assistance,
- Ongoing business recognition,
- Seminars (WaterSense & Energy Star),
- Tools and resources for savings
- Worked with Travel Council -

<https://www.facebook.com/discovermoab/videos/577869529649418/UzpfSTExMzQyMzAxNDk6MTAyMTkyODAwNTgwNDg5MzU/>

VALUES

Savings \$\$\$

Urban Myths



TYPICAL COST OF ENERGY



Total cost of energy can represent 1% to 5% of total revenue, and 5 to 30% of operating profit, for non-energy-intensive industries like food and beverage, commercial goods, retail and real estate.

Emphasized Savings: Corporate Chains & Highlighted Locally Owned Hotels



Indoor and outdoor **LED retrofits** at Marriott International's HQ in Bethesda, Md., will **reduce electricity use by 66%**, and save **\$120,000 /year** in energy and maintenance costs, with a **payback period of 2 years**. Energy expense savings will be \$104,000 per year, and maintenance mitigation will save another \$210,000 over the decade.



Aarchway Inn Saves \$15,000 a Year with Lighting Improvements

BUSINESS BACKGROUND

Aarchway Inn is a locally-owned hotel with 97 rooms in the heart of Moab. Mike Bynum, Managing Member of Casa de Amigos, LLC (ownership investment group since 2006), is committed to a great customer experience and efficient and sustainable operations. The inn is a certified Green to Gold business since 2017.

"It's easy to participate and it's a great way to get helpful information about how to be more energy and water efficient and to reduce waste. Participating in the business program and the lighting project feels like a win-win – for our business and for Moab."

Zach Bynum, Aarchway Inn

CHALLENGE

Improve lighting efficiency for better light quality, energy and cost savings, and reduced maintenance.

PROJECT SUMMARY

Upgraded with LEDs

- Hallway and room fixtures
- Track lighting fixtures
- Candelabra and pavilion fixtures
- Exterior wall fixtures

RESULTS

- ✓ Lower heat load from lighting so less cooling needed
- ✓ Estimated annual electric cost savings: **\$14,800**
- ✓ Estimated annual energy savings: **169,000 kWh**
- ✓ Rocky Mountain Power incentives: **\$800**
- ✓ Total project cost: **\$18,495**
- ✓ Simple project payback: **1+ year**

Conservation Culture



Depth and Breadth



Tier Rates

Business and
Residential Training

Water Conference

Bee-Inspired - USU

Rebates (Connections)



Water Conservation

Community Energy Plan



Focus Area 1: Housing

*Increase Energy
Efficiency in New and
Remodel Construction*

*Increase Energy
Efficiency in Existing
Housing*

Focus Area 2: Lodging

*Increase Energy
Efficiency and
Renewable Energy
Activities in the Sector*

Focus Area 3: Community Solar

*Encourage Rooftop
Solar and Participation
in Renewable Energy
Programs*

*Develop Options for
Local Solar Capacity
in Grand County*

U.S. Department of Energy: Cities Leading through Energy Analysis and Planning (Cities-LEAP) & State and Local Energy Data (SLED)



Fact sheets were created through a partnership in which cities provide utility data and DOE shares profile and modeling data to address energy efficiency, energy equity (i.e., low-income households) and decarbonization strategies. Specific locations and targeted areas are listed below:

Asheville, North Carolina: Reducing Electricity Demand through Building Programs & Policies

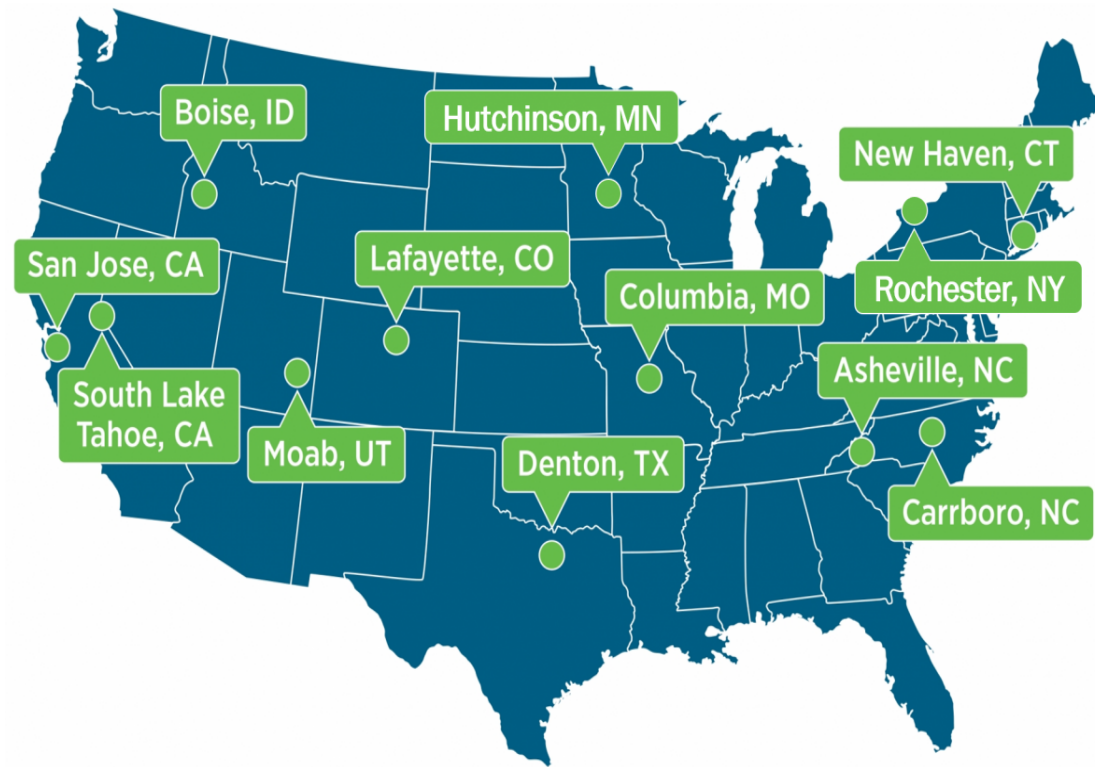
Moab, Utah: Using Energy Data to Target Carbon Reductions from Building Energy Efficiency

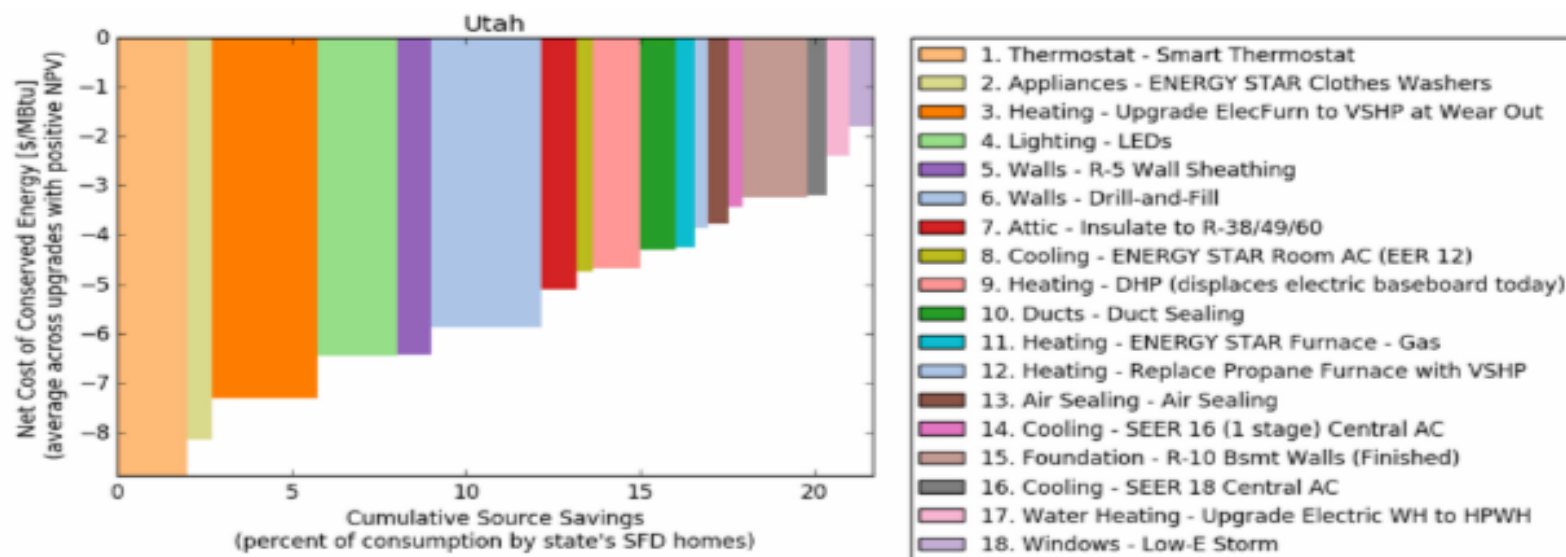
City Energy : From Data to Decisions



Columbia, Missouri:
Using Energy Data to
Reduce Emissions and
Achieve Low-Income
Household Energy
Savings

Lafayette, Colorado:
Using Energy Data for
Electric Vehicle
Infrastructure Planning





Annual Energy Consumption by Commercial Activity

Commercial activities: Top 5 electricity-consuming industries

	Number of establishments	Electricity use (MWh)	Rank
Food services and drinking Places	25	4,064	1
Food and beverage stores	4	3,411	2
Hospitals	1	2,983	3
Accommodation	22	1,975	4
Nonstore retailers	2	692	5

Commercial activities: Top 5 natural gas-consuming industries

	Number of establishments	Natural gas use (Mcf)	Rank
Hospitals	1	11,282	1
Food services and drinking places	25	6,831	2
Accommodation	22	3,866	3
Food and beverage stores	4	3,380	4
Ambulatory health care services	9	1,890	5



State Initiatives

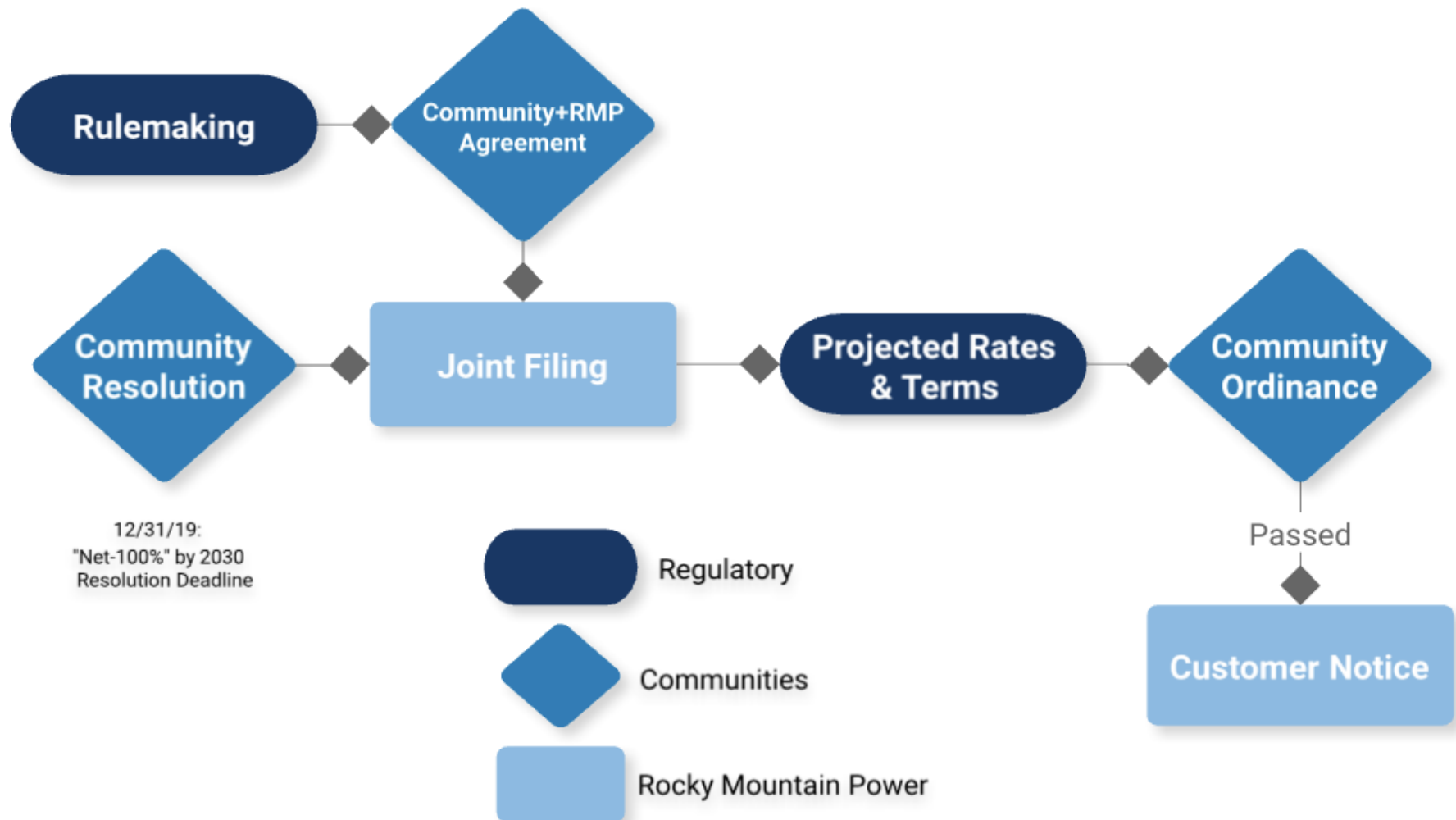
**TECHNICAL MODELING
REGULATORY CHALLENGES**

Multi City Commitments



- Rocky Mountain Power, a subsidiary of PacifiCorp. that operates in six states
- Oregon passed legislation to eliminate the use of coal fired power by 2035 and to double the amount of renewable energy by 2040.
- Salt Lake City, Park City and Moab set 2030 goal.
- RMP stated that the legislation would need to be passed clarifying impact to other rate payers.
- Assurance of commitment.
- Result – HB 411

Illustration of Process for Community Renewable Energy Act Participation



Solar Energy Innovation Network (SEIN) Grant



- SEIN is a collaborative research effort led by NREL to bring together teams of stakeholders from across the country and provide support of technical experts from national laboratories and other research institutions (RMI)
- Used RMP's existing forecast from their integrated resource plan (IRP) as a “business as usual” baseline
- Examined the trends in energy efficiency, distributed generation, and beneficial electrification
- Developed two alternative scenarios that represent higher levels of demand-side measures and electrification.
 - Economically & technically feasible level of adoption

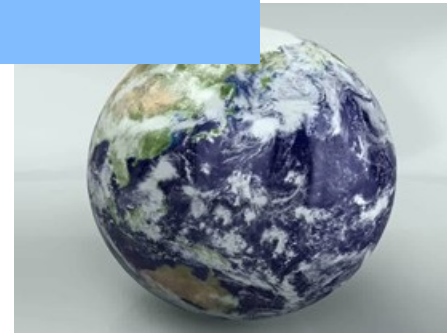
SEIN: Scenario Analysis



Support city energy and GHG goals and complement utility scale solar:

- Beneficial electrification
- Solar storage
- Electric vehicle adoption
- Distributed energy
- Advanced inverter
- Demand-side management capabilities

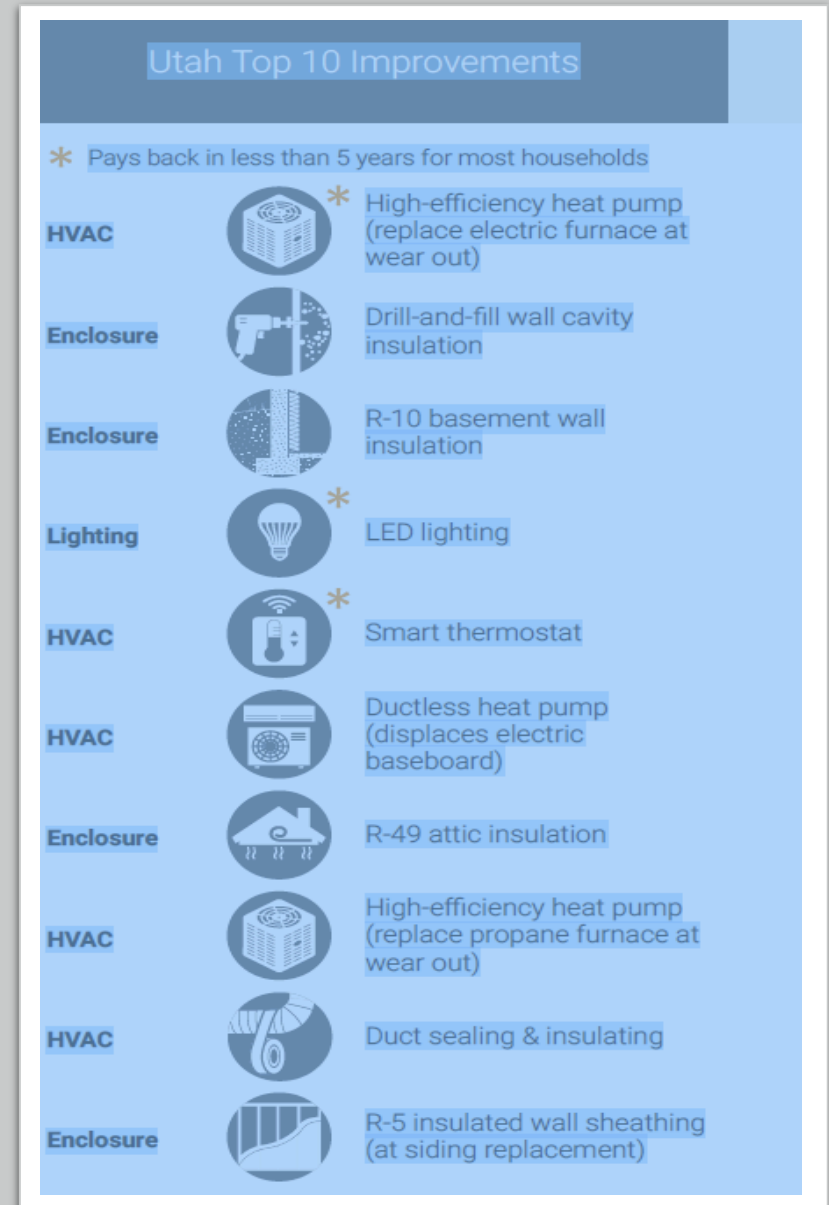
Roadmap



- Outline key strategies for each community to acquire resources to meet clean energy goals while keeping costs low and improving the flexibility of the grid.
- Inform decisions on prioritizing programs, pilot projects, policy efforts, etc.
- Identify areas in which accelerated action or attention is necessary or desirable.
- Identify areas in which deployment projections fall short of the cities' targets.
- Suggest future research or analysis that is needed.
- Identify key opportunities for the cities and utility to work together to accelerate progress.

Data to Decision Making

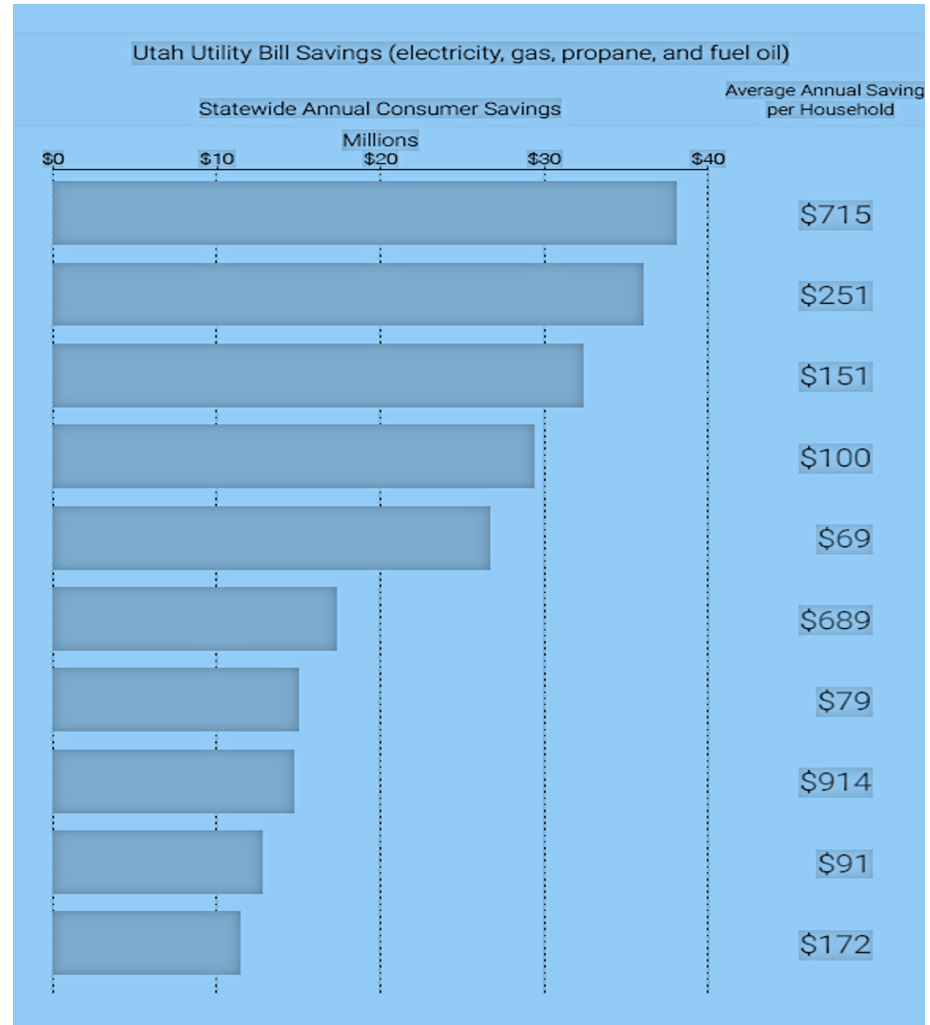
- Three top programs High efficiency heat pumps; LED lighting; and smart thermostats.
- Economics between cities (high efficiency heat pumps)
- Launched major LED lighting Program – assisted RMP with timing (off - season and contacts)
- Smart Thermostat Program wasn't available to Moab so negotiated with RMP



Statewide Annual Consumer Savings

Bill Savings (electricity,
gas, propane, and fuel oil)

Fuel Switching brought
Dominion, natural gas
provider to table



Reframing Conversation: Utility Perspective



Negative

- Increased use of rooftop solar will reduce the per-capita electricity.
- IRP is scrutinized.

Positive

- Electric vehicles and air source heat pumps for space and water heating.
- Battery storage will contribute greater flexibility and resiliency to the grid.
- Access GtG database.
- Promote their programs – Blue Sky & Solar Subscriber.



Regional Initiatives

WITHIN STATE & MOUNTAIN WEST

Regional Initiatives



2030 Resolutions – started with three communities & expanded to 20. Park City, Salt Lake City, Moab, Summit County, Cottonwood Heights, Holladay, Salt Lake County, Oakley, Kearns, Kamas, Millcreek, Francis, Ogden, Grand County, Orem, West Jordan, Springdale, Alta, Coalville and West Valley City.

Mountain Towns 2030 – Park City hosted Conference to expand # of cities/counties in UT, CO and WY

Vulnerability Consequences & Adaptation Planning (VCAP) – tribal, county and city collaboration aimed at water impacts

Mountain Town Net- Zero Conference

Applicability (Scale, 2050, Timeframe, Costs)



Drawdown: Paul Hawken

1. Refrigerant Management
2. Wind Turbines
3. Reduced Food Waste
4. Plant Rich Diets
5. Tropical Forest
6. Educating Girls
7. Family Planning
8. Solar Farms
9. Silvopasture
10. Rooftop Solar

Sustainability Action Plan

1. Recycling Contract- Monument
2. RMI Portfolio
3. Pilot Started – Old City Park
4. 2020 Local Food Campaign
5. Building Materials Series
6. Girl scouts and students through high school intern program – Community Conservation Challenge
7. Not Addressed
8. Golf Course Project
9. Pastures limited – tree canopy project (residents/parks)
10. Solar Information Packet – Residents and Businesses

U.S. Drought Monitor West

August 29, 2017
(Released Thursday, Aug. 31, 2017)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	60.08	39.92	15.27	8.27	4.89	3.04
Last Week 08-22-2017	64.77	35.23	15.27	7.47	4.26	1.47
3 Months Ago 05-30-2017	82.62	17.38	4.46	0.16	0.00	0.00
Start of Calendar Year 01-03-2017	54.19	45.81	21.51	8.53	5.11	2.44
Start of Water Year 09-27-2016	27.78	72.22	30.95	13.45	5.77	2.81
One Year Ago 08-30-2016	24.36	75.64	34.75	12.84	5.99	2.81

Intensity:

 D0 Abnormally Dry	 D3 Extreme Drought
 D1 Moderate Drought	 D4 Exceptional Drought
 D2 Severe Drought	

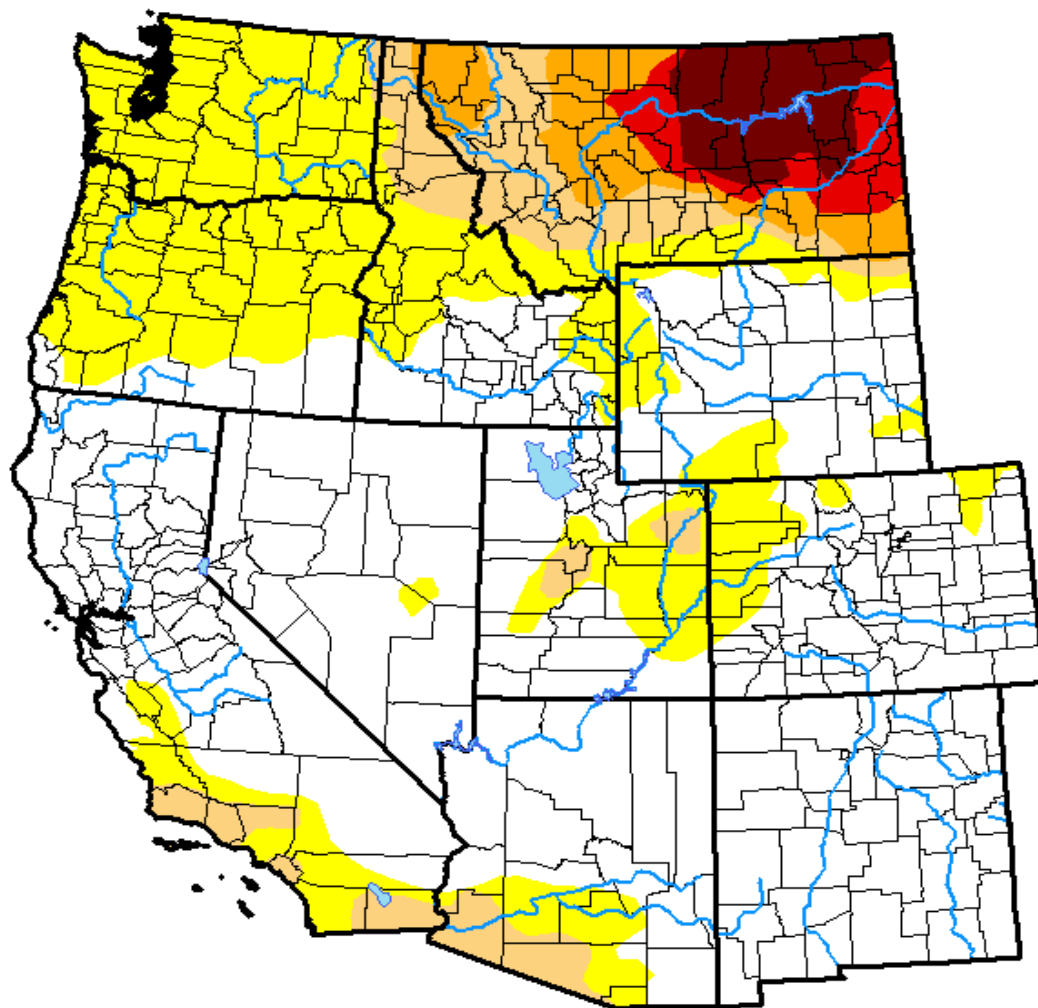
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:

Chris Fenimore
NCEI/NESDIS/NOAA



<http://droughtmonitor.unl.edu/>



Acknowledgements



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Mark Finley, Finley Productions

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Lucinda Smith, City of Fort Collins

Kathy Collier, City of Fort Collins

GtG Partners *

THOUGHTS?



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Website: [www:Sister's Guide
to Sustainability](http://www:Sister's%20Guide%20to%20Sustainability)

Thanks.....



Green to Gold

Educational Facilities

Grand County High School

Moab Charter School

Helen M Knight Elementary School

Grand County Middle School

St. Francis Episcopal Church

Moab Made

Riverside Plumbing

Manzana Springs

Red Moon Lodge

Youth Garden

Governmental Agencies

City of Moab

Grand County



Green to Gold

- HASU
- Solid Waste District
- Travel Council
- UDOT
- UMTRA

Non-Profits

- KZMU
- Moab Mountain Bike Club
- Multicultural Center
- Utah Native Plants
- Sierra Club

Restaurants

Blue Sky Participants



- Arches National Park Visitor Center
- Arches Trading Post, Inc.
- Atomic Hair
- Back of Beyond Books
- Best Western Canyonlands Inn
- Buck's Grill House (Atomic)
- Canyon Voyages Adventure Co.
- Canyonlands Field Institute
- Canyonlands National Park Visitor Center
- Certified Ford
- City of Moab

Blue Sky Participants



- Dave's Corner Market
- Eddie McStiff's Restaurant
- Escape Adventures
- Footprints, Inc.
- Grand County School
- Inn Realty
- Legion Paper
- Lema's Kokopelli Gallery
- Milt's Stop & Eat
- Moab Adventure Center

Blue Sky Participants



- Moab Arts and Recreation Center
- Moab Information Center
- Moab Recreation and Aquatics Center
- Moab Times-Independent
- Moonflower Community Cooperative
- Poison Spider Bicycles
- Portage, Inc.
- Red Rock Bakery and Cafe
- Rim Tours, Inc.

Blue Sky Participants



- Seekhaven
- Sheri Griffith Expeditions
- St. Francis Episcopal Church
- Sunflower Hill B&B Inn
- Tag-A-Long Expedition
- The Synergy Company
- Tom Till Gallery
- Utah State University - Moab Campus

Resources



1. Community Energy Plan

2. Jumping From the Ivory Tower

3. New Ecological Home

4. Fostering Sustainable Behavior

Endnotes



Slide 9 : Sustainability's strategic worth: McKinsey Global Survey results," McKinsey, July 2014

- Slide 14: Jason Smith, manager of sales engineering at sustainability software provider Hara, in Environmental Leader's webinar, Identifying Hidden Energy and Sustainability Costs, November 16, 2011. Reported in Environmental Leader, "Total Energy Costs 'Far Exceed Utility and Fuel Spend,'" November 2011.

Slide 25: Solar Energy Innovation Network <http://www.nrel.gov/solar/solar-energy-innovation-network.html>

Slide 30: US Department of Energy. January 2017. U.S. Energy and Employment Report. Wilson, E. et al. Energy Efficiency Potential in the US Single Family Housing Stock: NREL/TP 5500-68670, 2017

Video:

<https://www.facebook.com/discovermoab/videos/577869529649418/UzpfSTExMzQyMzAxNDk6MTAyMTkyODAwNTgwNDg5MzU/>

Legal References

[The Community Renewable Energy Act , Utah Code 6654-17, 901-909](#)

CITY OF MOAB RESOLUTION NO. 38-2019

**A RESOLUTION ADOPTING THE ACCELERATED GOAL OF 100% RENEWABLE
ELECTRICITY BY 2030**

CITY OF MOAB RESOLUTION NO. 60-2019

**A RESOLUTION ADOPTING VULNERABILITY, CONSEQUENCES, AND ADAPTATION
PLANNING (VCAP) RECOMMENDATIONS**

Technical References

- Solar Potential by Zip Code: www.google.com/get/sunroof/data-explorer
- The Community Renewable Energy Act Guidelines
- Efficiency Strategies: <https://restock.nrel.gov/factsheets/approach>
- Energy Profiles: <https://Eere.energy.gov/sled>
- Commercial Benchmarking: www.costar.com

Financial References

- On-Bill Financing: <https://acee.org/sector/state-policy/toolkit/on-bill-financing>
- C-PACE: Commercial Loans
- Green Banks: www.nrel.gov/state-local-tribal/basics-green-banks.html