



Building Energy Use

Buildings are currently the primary consumer of energy in our region and therefore are the largest emitting sector with 45% of our total GHG emissions. Emissions in this sector come from electricity and natural gas use, and a small amount of propane consumption. Thus, reductions in the building sector will come from supply side transition to renewable energy, beneficial electrification, and increased efficiency of our buildings.

Many of our commercial buildings are mixed use and include residential space, and many of our residences are larger than many commercial spaces across the region. There is significant cross-over between the recommended actions for buildings in both the residential and commercial sectors, so our objectives and prioritized actions apply to all buildings. With a complex mix of historical buildings and new construction, unimproved, and newly renovated buildings, recommendations to reduce energy in the building sector are diverse and aim to address building energy use from several angles to benefit all community members.

Building Energy Use

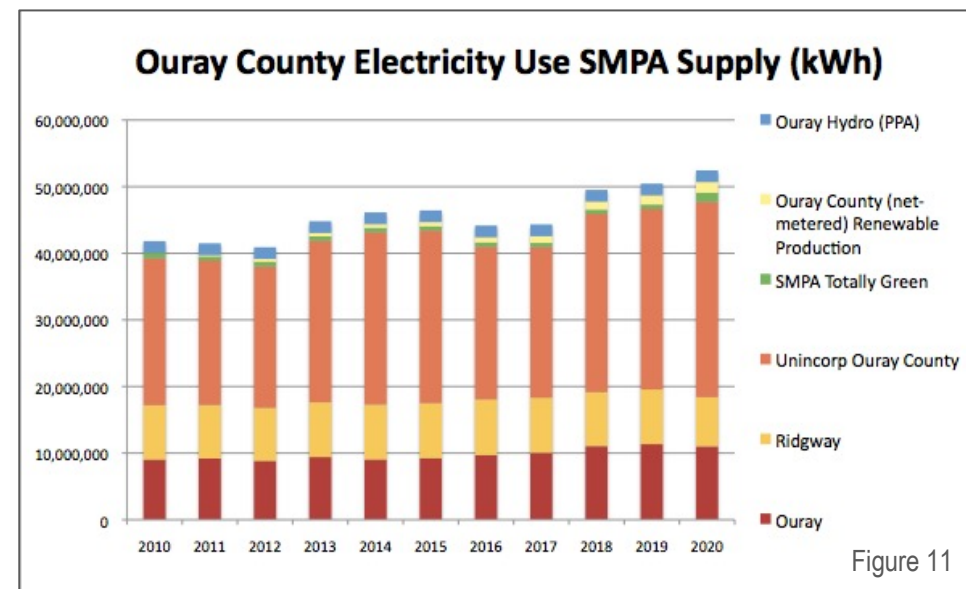
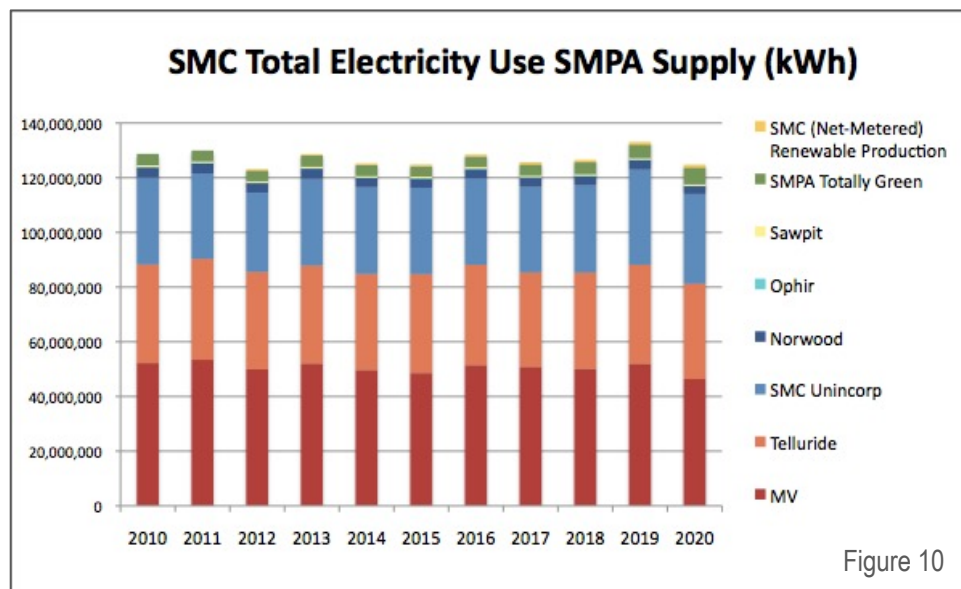


Residential energy accounts for 28% of our region's total GHG emissions. San Miguel and Ouray County's residential community is primarily comprised of free market and workforce housing rentals, which vary in age, quality, size, and occupancy. These residences may be single family homes, multifamily properties, mobile homes, and residences in mixed-use buildings.

Commercial energy consumption accounts for 17% of our region's GHG emissions, and similarly to residential energy, nearly all these emissions come from electricity and natural gas use. Free market and subsidized properties comprise San Miguel and Ouray Counties' commercial building stock and vary in age, quality, size, and occupancy. These buildings may be owner-occupied and/or tenant-occupied, condominium style and mixed-use buildings.

As our tourism economy, population, and part-time visitor numbers cause an ongoing increase in construction, the number of utility accounts have increased as well, causing a challenging situation to address with the aim of reducing our total GHG emissions. Our collaborative and focused actions must include creative and progressive strategies if we are to reach our goals.

Building Energy Use Trends - Electricity

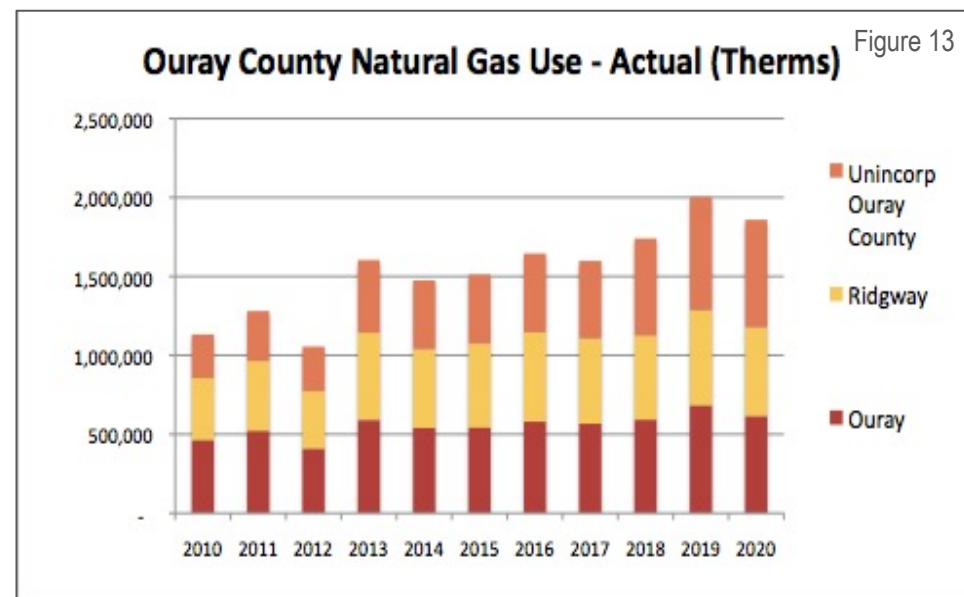
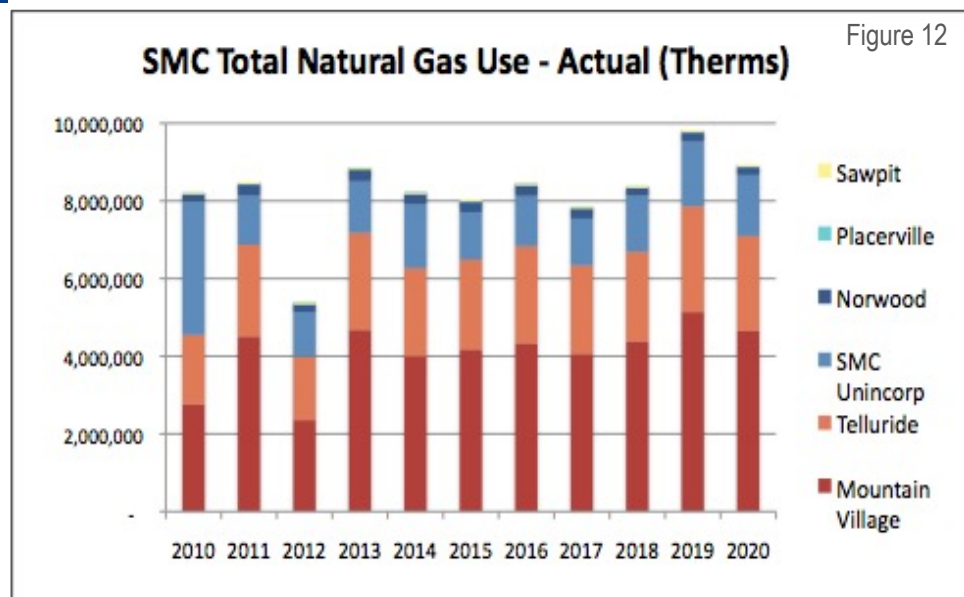


EcoAction Partners tracks annual electricity use and local renewable energy production for analysis by the SEB. Electricity consumption in San Miguel and Ouray Counties is graphed by jurisdiction in the charts above. The top of each bar indicates the total electricity use in each county per year. Electricity use that is offset by SMPA Green Blocks or produced through local renewable energy is separated from general usage in order to show progress on each of these strategies.

Electricity use across SMC has held relatively steady aside from a noticeable increase in 2019 and a COVID-19 associated decrease in 2020, indicating success with our efficiency programs. The Town of Ridgway and City of Ouray show a similar trend. The 2019 increase is likely a combination of a noticeable increase in tourism as well as the beginnings of transition to electricity from fossil fuel use. It could also be accounted for due to an increase in installation and use of air conditioning systems during summer months as temperatures continue to rise. The decrease in 2020 is attributed to the impacts of COVID-19. Ouray County experienced an increase in commercial activity that increased electricity consumption from 2018 through 2020.

In 2019 SMPA revamped their Green Blocks program to Totally Green which is designed to make it easier for members to offset their electricity use 100%, significantly increasing participation in the program. Net-metered renewable energy system installations have also noticeably increased in recent years as the costs for solar PV has decreased worldwide.

Building Energy Use Trends – Natural Gas



*2012: gap in data provided; & a TMV snowmelt system was under remodel during the winter.

EcoAction Partners tracks annual natural gas use along with weather data for analysis by the SEB. Natural gas use is significantly impacted by outdoor winter temperatures and annual snowfall as it is used to heat buildings and for snowmelt systems. The SEB analyzes actual and normalized natural gas consumption along with weather charts, in order to fully understand the trends. Actual natural gas consumption in San Miguel and Ouray Counties is graphed by jurisdiction in the charts above. The top of each bar indicates the total natural gas use in each county per year.

Actual natural gas use across both counties has been noticeably increasing as our regional economy expands. A dramatic increase in new construction is far out-weighting efficiency program impacts, even with improved building energy codes. We've also seen an increase in natural gas use due to conversions from propane to natural gas, although this impact is difficult to track due to lack of data from propane and natural gas companies. The decrease in 2020 is attributed to the impacts of COVID-19.













Natural gas use can only be offset through carbon offsets (not RECs) since it cannot be produced through renewable energy methods. A transition away from natural gas to electricity is required in order to reach GHG emission reduction goals associated with natural gas.

Building Energy Use Accomplishments

- All governments have taken actions to improve energy efficiency of their buildings and utility uses. A few key examples:
 - Telluride built renewable energy projects and purchases RECs from power produced at the Ridgway Hydro Dam to offset 100% of government electricity use and a significant portion of the community's electricity use.
 - SMC received a \$750,000 DOLA grant for energy efficiency, solar PV systems, and solar battery storage for properties in Ilium and Norwood. This project is reducing county carbon emissions by 50%, and SMC is offsetting the rest with SMPA's Totally Green program, resulting in 100% renewable electricity use for SMC.
 - Ouray County is investigating a net zero carbon initiative similar to what SMC is undertaking and is a Totally Green member.
 - The Town of Ridgway has reached 100% renewable energy offset through SMPA's Totally Green program.
 - Ridgway Town Hall, Ouray hot springs/gym and Library, street lighting, and most other government facilities across the region have been converted to 100% LED lighting.
 - The Town of Norwood upgraded all municipal lighting and streetlights to LED bulbs.
 - Ridgway and Ouray collaborated to examine use of performance contracting to improve the efficiency of municipal facilities.
- Enhanced electricity metering & monitoring was made available through SMPA's online SmartHub tool: SMPA improved our ability to track electricity use in real time. Although metering does not reduce emissions directly, it allows residents and business owners alike the opportunity to review hourly electricity use and use data analysis to identify opportunities to improve efficiency and save money.
- 2018 International Energy Code adopted for new construction with local amendments adopted by Telluride, TMV, Ridgway and Ouray County. SMC (which includes Norwood) plans to adopt during 2021. Ophir will likely follow suit soon after.
- Adoption and implementation of Renewable Energy Mitigation Programs (REMP & TEMP) to address mitigation of exterior energy systems (such as snowmelt systems, heated garages, and outdoor spas and pools). Funds collected through these programs have been used on a wide variety of projects to reduce emissions.
- Ridgway secondary school EV charger is now online and fully operational.
- Sunnyside is a new net zero affordable housing community under construction by Telluride and SMC to be completed in 2022.
- EAP's SMPA IQ Weatherization Program (CARE) has successfully weatherized 164 homes between 2017-2021, reducing annual GHG emissions by 280 mtCO₂e, significantly saving homeowners and renters on annual utility bills, and improving the comfort and safety of these homes. Participating homes have historically received further utility support through a 50% offset from the SMPA IQ community solar array. The array is currently at full capacity and several key stakeholders are exploring additional solar opportunities earmarked for income qualified residents.
- The Towns of Norwood and Ridgway have gained International Dark Sky designation.
- Telluride Ski & Golf participated in the National Ski Areas Association Climate Challenge from 2012-2019, continuing to make strides toward reducing direct energy use and waste associated with ski area operations as well as influencing indirect GHG emissions of employees and guests.

Building Energy Use Recommendations

OBJECTIVE 1: Beneficial electrification of buildings

ACTION	GHG REDUCTION POTENTIAL				CO-BENEFITS					CO-BENEFITS	PARTNERS
Transition building mechanical equipment and appliances from fossil fuels to electricity through incentives, outreach and building codes. Include: space and water heating, appliances, and other equipment.					=	\$		+		Ongoing	SMPA
Encourage transition to/use of geothermal, air source heat pumps, or other available heat exchange technology.					=	\$		+		3-10	SMPA, WCU

Beneficial Electrification includes the application of electricity to end-uses that would otherwise consume fossil fuels (e.g., natural gas, propane, oil, gasoline) where doing so satisfies at least one of following conditions, without adversely affecting the others: save consumers money over time; benefit the environment and reduce [GHG] emissions; improve product quality or consumer quality of life; or foster a more robust and resilient grid. (from SMPA, per The Beneficial Electrification League)





































This method of reducing GHG emissions has just recently become viable in our region as our overall electricity fuel supply mixture has changed. Previously highly carbon-intensive, Tri-State's electricity emissions factor was too high for electrification to decrease GHG emissions. As our electricity supply shifts to be increasingly sourced from renewable sources, converting traditional uses of fossil fuels to electricity now contributes toward reducing our regional carbon footprint. It will be important for us to work closely with SMPA during this transition in order to track the associated increase in electricity use with fossil fuel use conversion versus electricity use increase for other more traditional reasons, such as visitor population, economy, and new construction.

KEY

 GHG Potential 1-4	= Promotes Equity	\$ Economic Sustainability	 Environmental Quality	+ Public Health & Safety	 Builds Resilience
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Building Energy Use Recommendations

OBJECTIVE 2: Continue to improve building energy codes for new construction, remodels and additions



















ACTION	GHG REDUCTION POTENTIAL				CO-BENEFITS					TIMELINE	PARTNERS
Adopt the 2018 International codes with specific local requirements as appropriate and to exceed minimum standards.					=	\$		+		1	SMC, City of Ouray, Town of Ophir
Strengthen existing building efficiency standards and codes to require 10% better than basic code construction, update building energy codes at least every 6 years, and move towards net zero energy buildings. Incentivize 'beyond code' construction practices.					=	\$		+		Ongoing	EAP, all regional governments
Continue to coordinate regional alignment of energy codes and 'beyond code' preferences.					=	\$		+		Ongoing	EAP, all regional governments
Facilitate education for contractors, architects and property managers.					=	\$		+		Ongoing	EAP, SMPA, BHE
Promote/incentivize optimal control systems and thermostat settings to couple comfort with efficiency.					=	\$		+		1-3	Telluride, MV, Ridgway, City of Ouray, SMPA, BHE
Promote/incentivize building automation systems (such as key card entry activation of electricity in lodging rooms).					=	\$		+		1-3	Telluride, MV, Ridgway, City of Ouray, SMPA, BHE, lodging

KEY





















Building Energy Use Recommendations

OBJECTIVE 3: Increase natural gas efficiency

ACTION	GHG REDUCTION POTENTIAL				CO-BENEFITS					TIMELINE	PARTNERS
Continue rebate and incentive programs to replace old or inefficient systems/appliances.					=	\$		+		Ongoing	EAP, SMPA, Tri-State
Encourage water tank insulation and pipe wrap on hot water systems.					=	\$		+		Ongoing	BHE
Provide technical assistance for natural gas heating alternatives.					=	\$		+		Ongoing	EAP, BHE

OBJECTIVE 4: Reduce energy consumption in rentals, apartments and multifamily buildings

ACTION	GHG REDUCTION POTENTIAL				CO-BENEFITS					TIMELINE	PARTNERS
Support building automation to optimize efficiency and effectiveness.					=	\$		+		1-5	SMPA, Tri-State, EAP, All Regional Governments
Incentivize energy efficiency upgrades in rental properties.					=	\$		+		1-5	Telluride, MV, Ridgway, Ouray
Develop renter-specific outreach and education campaigns.					=	\$		+		Ongoing	Telluride, MV, Ridgway, Ouray

KEY



Building Energy Use Recommendations

OBJECTIVE 5: Improve the energy efficiency performance of existing buildings

ACTION	GHG REDUCTION POTENTIAL				CO-BENEFITS					TIMELINE	PARTNERS
Continue to provide and educate community members on energy efficiency and renewable energy incentives available from SMPA, BHE, and municipalities.					=	\$		+		Ongoing	SMPA, BHE, EAP
Incentivize refrigeration upgrades.					=	\$		+		Ongoing	SMPA, Tri-State
Incentivize, mandate & educate on "away" mode technology for second homes when unoccupied.					=	\$		+		Ongoing	SMPA, Tri-State
Expand outreach on financing opportunities. Existing examples: Property Assessed Clean Energy; CO RENEW; Alpine Bank and other specialized financing mechanisms.					=	\$		+		1-3	Property Assessed Clean Energy, CO RENEW, Alpine Bank
Encourage utilities to implement energy use comparison mechanisms in monthly billing.					=	\$		+		3	SMPA, Tri-State

OBJECTIVE 6: Anticipate and mitigate likely expansion of air conditioning use in new & existing buildings













ACTION	GHG REDUCTION POTENTIAL				CO-BENEFITS					TIMELINE	PARTNERS
Avoid or prolong the need for air conditioning via building design and management. Utilize education & outreach to building trades, owners, and facility and property managers.					=	\$		+		Ongoing	Architect firms, Property Managers, EAP, All Regional Governments
Encourage high efficiency air conditioning systems as AC use becomes more prevalent.					=	\$		+		5-10	SMPA, Tri-State
Coordinate with efforts to adopt high efficiency electric heating systems (i.e. dual ground/air-source heat pumps).					=	\$		+		Ongoing	SMPA BHE, Tri-State, All Regional Governments

KEY



Building Energy Use Recommendations

OBJECTIVE 7: Other actions

ACTION	GHG REDUCTION POTENTIAL				CO-BENEFITS					TIMELINE	PARTNERS
Encourage continued regular "cost of service studies" by SMPA to incentivize and balance current and future priorities (i.e., EVs, fuel switching, time of use, peak shaving, energy efficiency, DSM).					=	\$		+		Ongoing	SMPA, all regional governments, SMPA members, EAP
Continue to host and expand EcoAction Partners' Green Business Program awarding and highlighting business that achieve energy efficiency and sustainability thresholds.					=	\$		+		Ongoing	EAP, local businesses

KEY

