

**TOWN OF MOUNTAIN VILLAGE
GREEN TEAM COMMITTEE MEETING
TUESDAY, AUGUST 20, 2019, 2:00 PM
2ND FLOOR CONFERENCE ROOM, MOUNTAIN VILLAGE TOWN HALL
455 MOUNTAIN VILLAGE BLVD, MOUNTAIN VILLAGE, COLORADO
AGENDA **REVISED****

Item #	Time	
1.	2:00	Call to Order
2.	2:05	Approval of the July 16, 2019 Minutes
3.	2:10	Discussion & Updates Regarding: <ul style="list-style-type: none"> A. 2018 MV Town Government GHG Emissions & Energy Use Report (Wheels, 10) B. REMP and Building Update (Haynes, 10) C. EAP Contract Final Approval (Dohnal, 5) D. Voluntary Single-Use Plastics Reduction Initiative Update (Dohnal, 10) E. EPA Waste Audit Report (Greenspan, 5) F. Glass Project Update (Greenspan, 5) G. Community Clean Up Day Subcommittee Update (Wagner, 5) H. Composting Subcommittee Update (Berry, 5)
4.	3:05	Items for Consideration: <ul style="list-style-type: none"> A. RFP for GHG Emissions & Energy Use Discussion B. 2020 Green Team Work Plan C. San Miguel Watershed Coalition Update D. Beaver Issue E. Finn Kjome to speak to the committee about Mountain Village water F. Piece of Art- to bring awareness of the Green Team Committee G. Adopt a Highway H. 2019 July – Sept: 3rd Quarter Green Team Quarterly Report. Present in OCT I. 2019 Oct – Dec: 4th Quarter Green Team Quarterly Report. Present in JAN J. 2020 January – March: 1st Quarter Green Team Quarterly Report. Present in APRIL K. 2020 April – June: 2nd Quarter Green Team Quarterly Report. Present in JULY L. 2020 July – Sept: 3rd Quarter Green Team Quarterly Report. Present in OCT M. 2020 Oct – Dec: 4th Quarter Green Team Quarterly Report. Present in JAN
5.	3:15	Next Steps
6.	3:20	Other Business
7.	3:30	Adjourn

TO: MOUNTAIN VILLAGE MAYOR AND TOWN COUNCIL
FROM: KIM WHEELS, ECOACTION PARTNERS
SUBJECT: 2018 GOVERNMENT ENERGY USE AND GREENHOUSE GAS REPORT
DATE: JULY 25, 2019

BACKGROUND

In 2009 the Town of Mountain Village along with Telluride and San Miguel County adopted a resolution to achieve a 20% reduction in greenhouse gas emissions by the year 2020. The new county-wide target is carbon neutrality.

The town is currently using 2010 as the baseline year for achieving this goal. All three governments are calculating GHG emissions by converting total electricity, natural gas, and fuel consumed by government operations to carbon dioxide emissions, a primary greenhouse gas, using a standardized EPA conversion. Note: this is a simplified greenhouse gas calculation and analysis.

2018 TMV GOVERNMENT ENERGY USE AND GHG EMISSIONS SUMMARY

- 2018 total government CO2 emissions were **27% higher** than 2017 levels; **6% higher than average** of previous years; but still down 9% from 2010 baseline emission levels.
 - CO2 emissions from **natural gas were down only 3%** from 2010 baseline levels;
 - CO2 emissions from **electricity were 8% lower** than 2010 baseline levels; and
 - CO2 emissions from **fuel were down 26%** from 2010 baseline levels.
- **Natural gas** use was 38% higher in 2018 than 2017, and was only 2% lower than the 2010 baseline. **Plaza snowmelt** accounted for much of this increase, at 44% higher than 2017. Building natural gas use was 10% higher than 2017. This translates into a 34% increase in natural gas costs over 2017.

Note: The rise and fall of natural gas use closely correlates with weather temperatures and snowfall amounts in our region. Building natural gas use can be normalized to account for the difference in outdoor temperature between winters. **Normalized natural gas use for buildings indicate a 1% increase in 2018 over 2017 use, and a 23% decrease from 2010 usage.**

Thus, plaza snowmelt accounted for the majority of the increase in 2018. Note this data is per calendar year (not ski season). The plazas with significant increases were Heritage Crossing, Lost Creek / Blue Mesa parking (where area was added to the snowmelt system since 2017), and Sunny Ridge / See Forever Plaza). It would be worth charting the usage for each snowmelt system monthly, in order for appropriate staff to track efficiency and operation of systems regularly throughout the year.

- **Electricity use** in government facilities **increased 29%** in 2018 from 2017 levels. Electricity associated with water supply was higher than any year on record (see next bullet). Noteable electricity increases were also associated with street lights and the gondola parking garage, likely due to the cumulative effect of snowfall in late 2018, since the lighting is operated by daylight sensors. Overall, 2018 total electricity was **14% above** 2010 baseline levels.

Note: Electricity use is also impacted by winter temperatures & snowfall (though to a much lesser extent than natural gas), and is mostly due to increased operation of hydronic heating system pumps. Visitor numbers likely also influence electricity use.

- The **water department** experienced a **55% increase** in 2018 electricity use compared to 2017 usage. This results in a **74% increase** from 2010 baseline levels. This increase correlates directly with an increase in water supply, from **~221,000,000 gallons to ~324,500,000 gallons**. These values include water use for **snowmaking**, which was almost **165,000,000 gallons in 2018; approximately double** the snowmaking water use for 2017, a direct reflection of snowmaking continuing into 2018 over the dry 2017-2018 ski season. Water use for irrigation also increased during the dry summer of 2018.
- The **gondola** electricity use increased about 10% from 2017 to 2018, but remained 9% below 2010 baseline levels. Note that the additional morning and weekend run time of the gondola began in 2017, but 2017 electricity use was still less than 2016. Thus, the increase is associated with adding 9 cabins to the main gondola line in December of 2017. Overall ridership also increased by ~7% in 2018.

TMVOA and TMV continue to partner to offset 100% of the gondola's electricity use through the purchase of SMPA Green Blocks, which are renewable energy credits from SMPA. Due to gondola efficiency improvements over the years, the 2,000,000 kWh allotment of Green Blocks exceeded the current gondola electricity usage for several years. TMVOA has worked with SMPA to reallocate the excess Green Blocks. Thus, other TMVOA facilities are now also offset through SMPA's green power program.

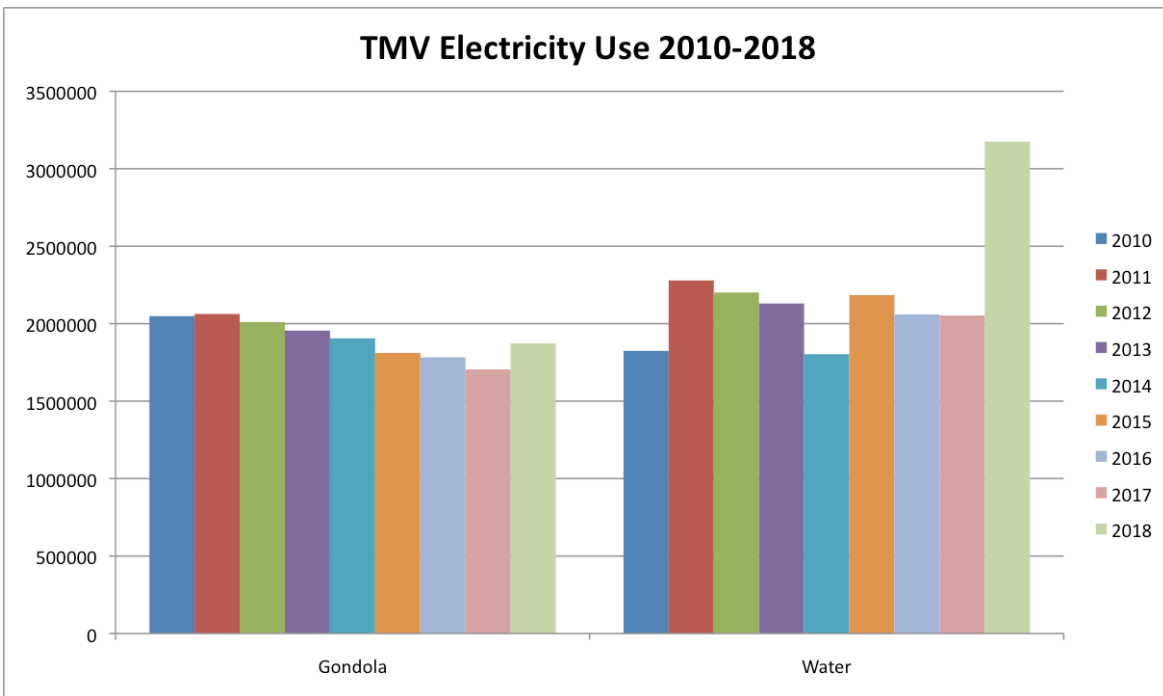
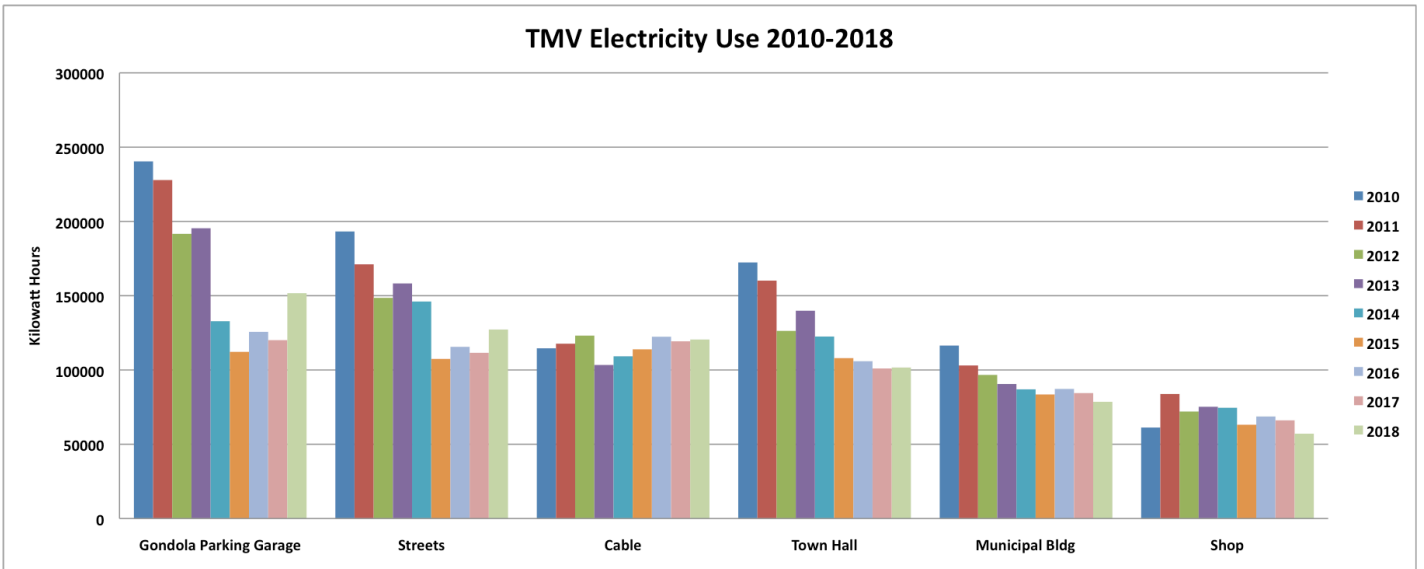
- **Village Court Apartments (VCA)** electricity use in 2018 went down 5.4% from 2017 levels, and was approximately 15% below 2010 baseline levels. Heating at VCA is provided by electricity, so winter temperature differences influence total electricity use. Weatherization and refrigerator replacement was performed in 3 buildings at VCA during 2018 through the SMPA Income Qualified Weatherization Program, which is managed by EcoAction Partners and funded by Energy Outreach Colorado. The Town of Mountain Village also contributed funds for 3 of the refrigerators. These improvements contributed toward the decrease in electricity usage in 2018.

Note: VCA is not included in overall government emissions totals.

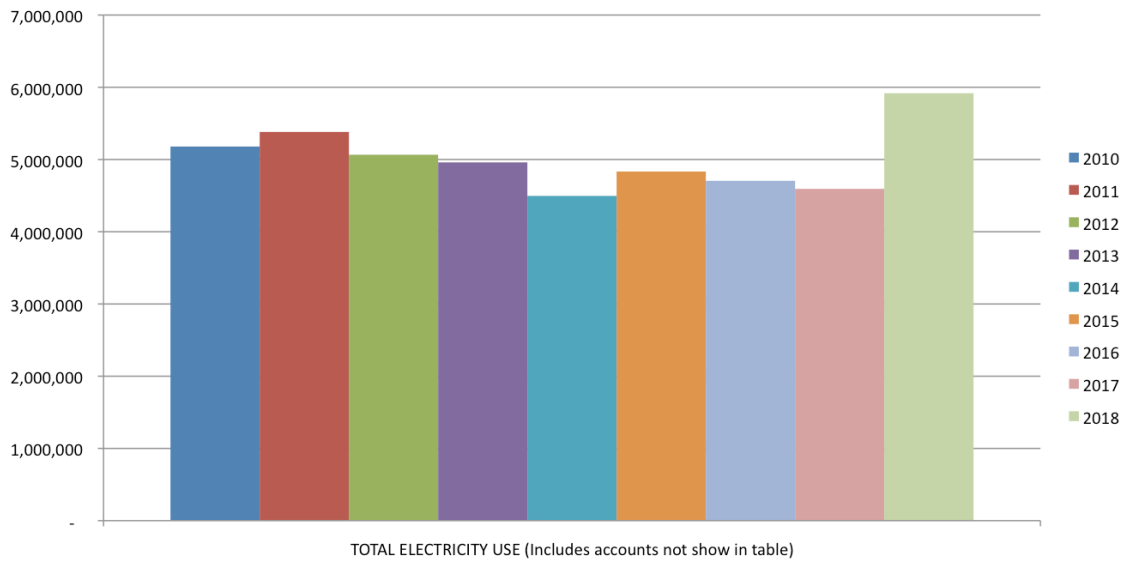
- The **emissions factor** for our electricity from Tri-State continues its downward trend. The emissions factor for 2017 was 1.60 lbs CO₂e per kilowatt hour of electricity used; down

from the emissions factor of 2.2 lbs CO₂e/kwh for the baseline year of 2010. According to the EPA, the national average is about 1.24 lbs CO₂e/kwh, and Colorado's average is 1.91 lbs CO₂e/kWh.

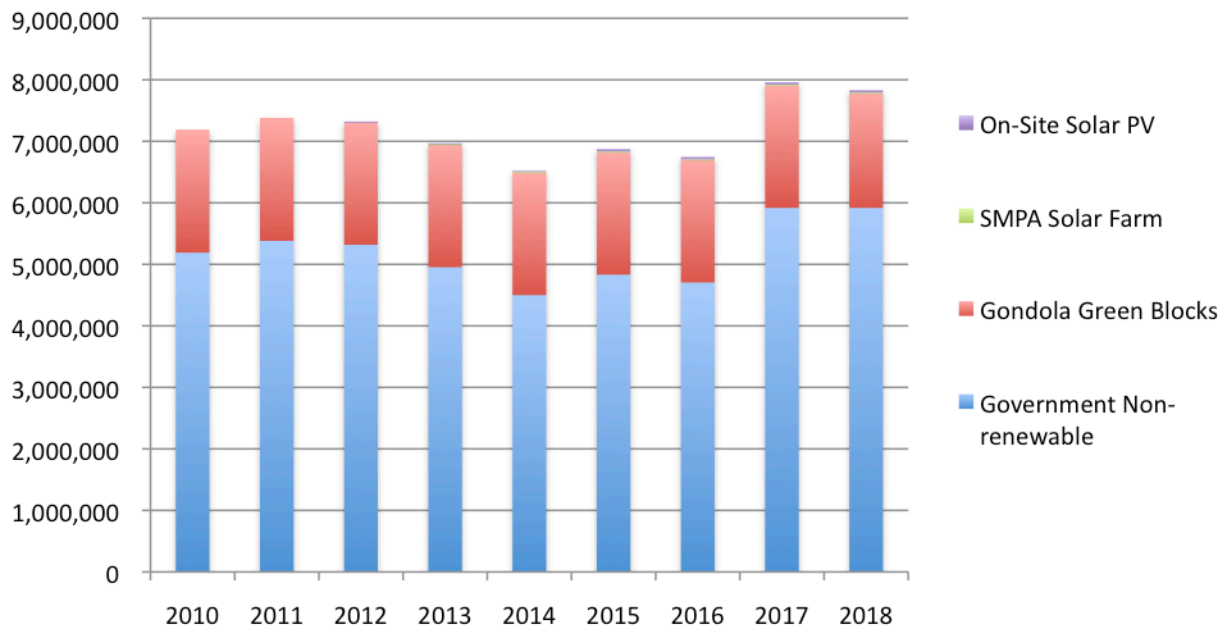
- **Total Fuel use** was **1% higher** in 2018 (56,797 total gallons used) than 2017 with an increase in both unleaded & diesel fuels (611 gal). This resulted in a 26% decrease in total annual fuel used compared to 2010 baseline levels. However, the cost of fuel in the U.S. significantly increased from 2017 to 2018, resulting in an increase in fuel costs by 36% to over \$140,000.



Total TMV Electricity Use 2010-2018

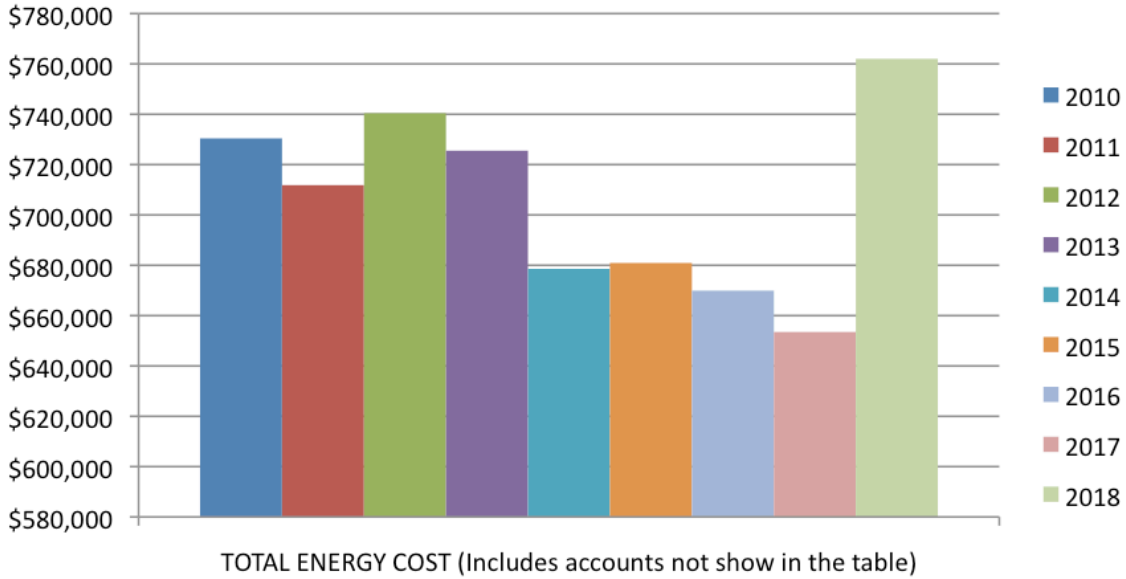


TMV Government Electricity Analysis (kWh)

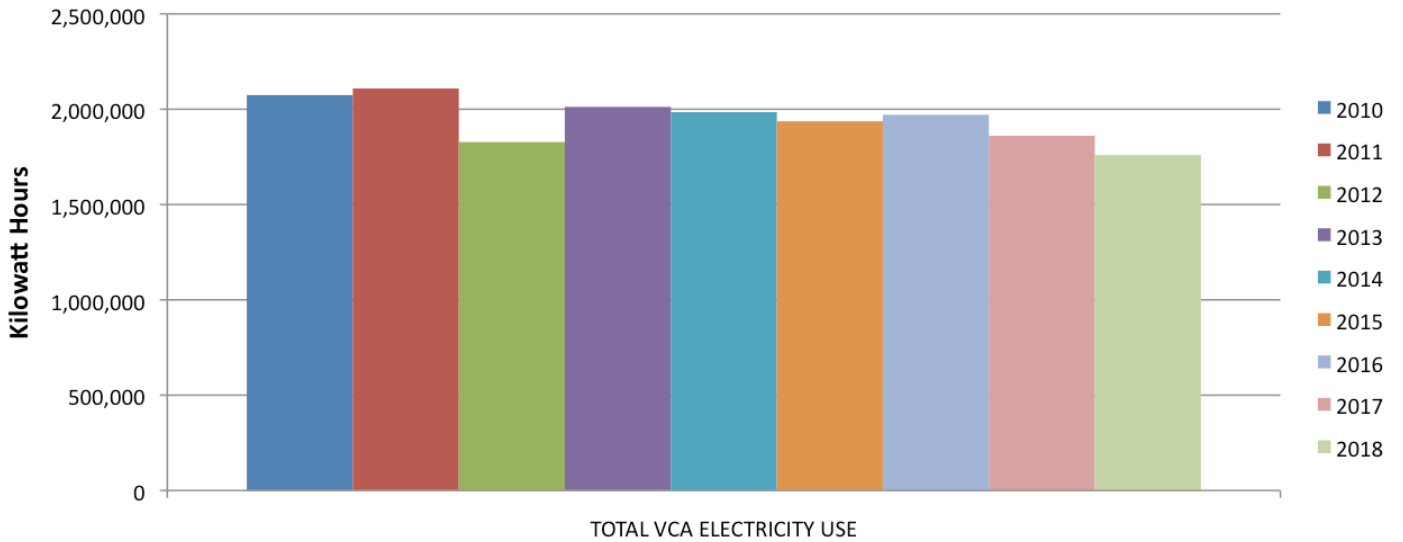


SMPA data for 2018 still needed to update the above chart!

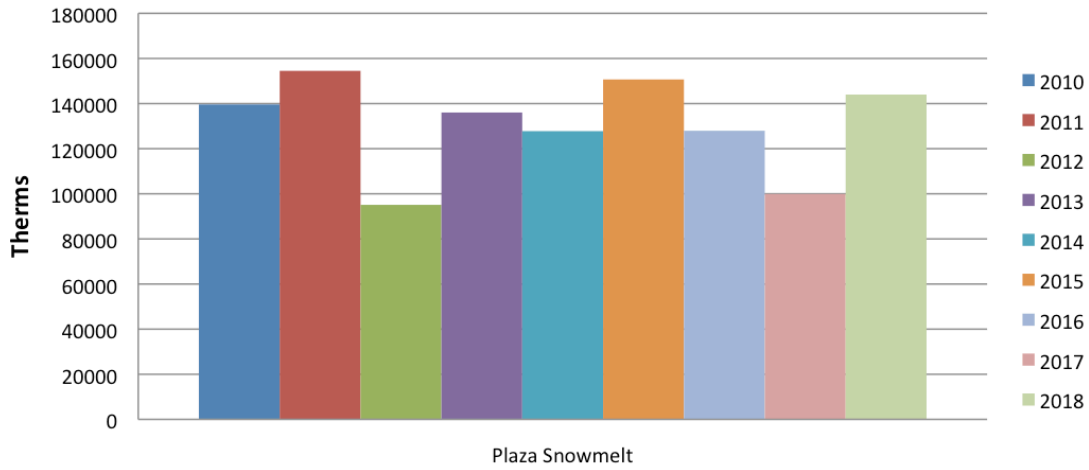
TOTAL TMV ELECTRICITY COST 2010-2018



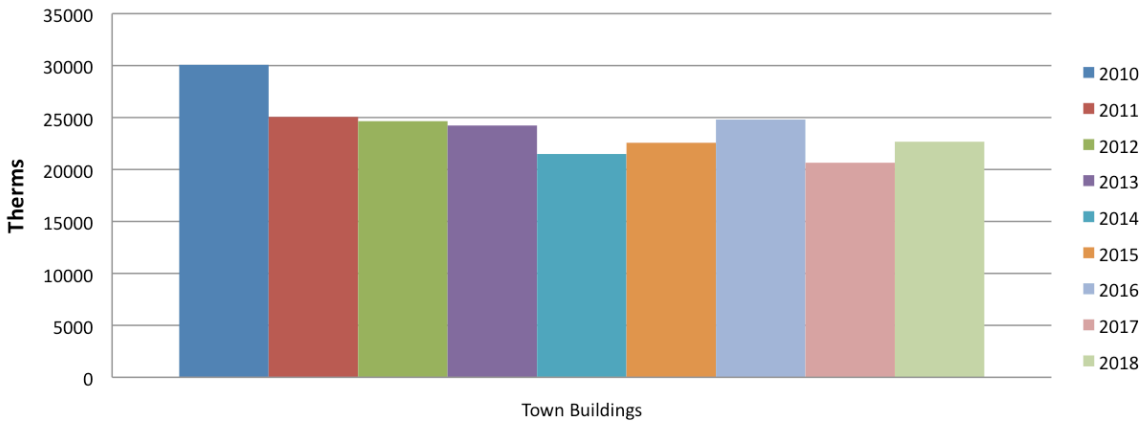
VCA Electricity Use 2010-2018



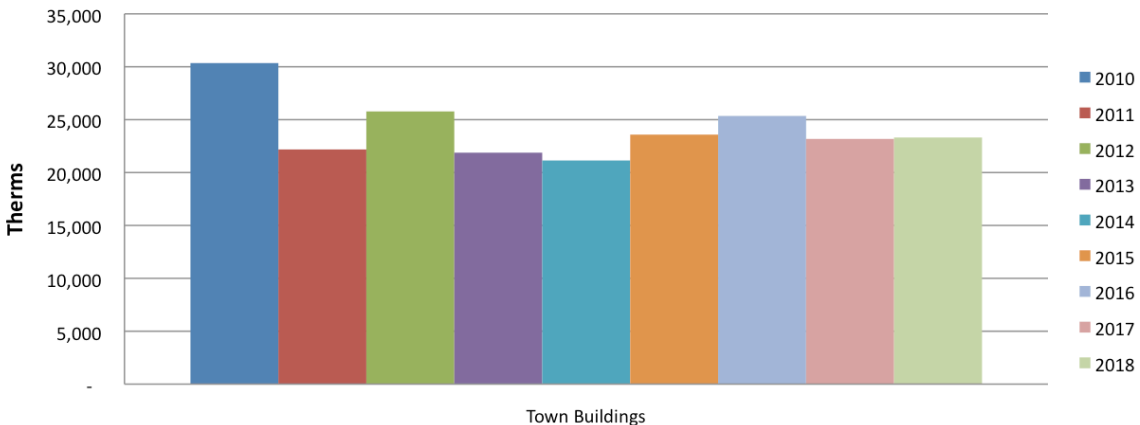
Plaza Snowmelt Natural Gas Use 2010-2018



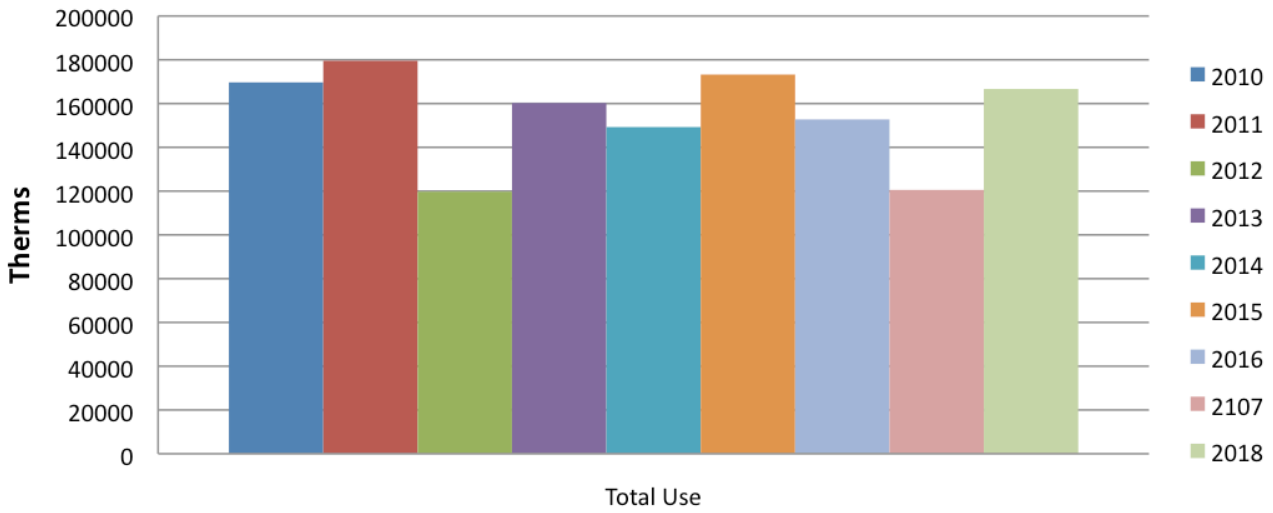
TMV Government Buildings Natural Gas Use 2010-2018



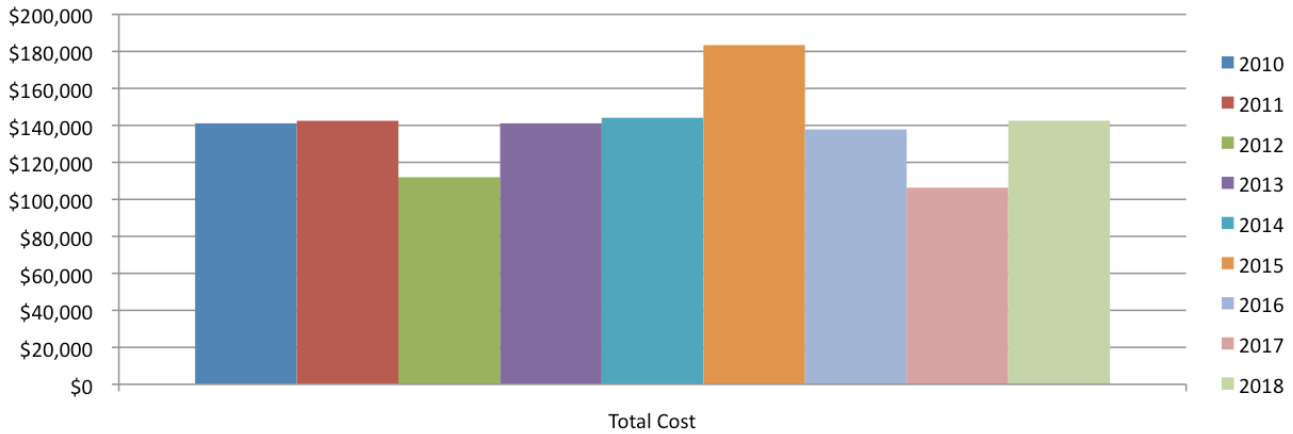
TMV Government Buildings Natural Gas Use (Normalized) 2010-2018



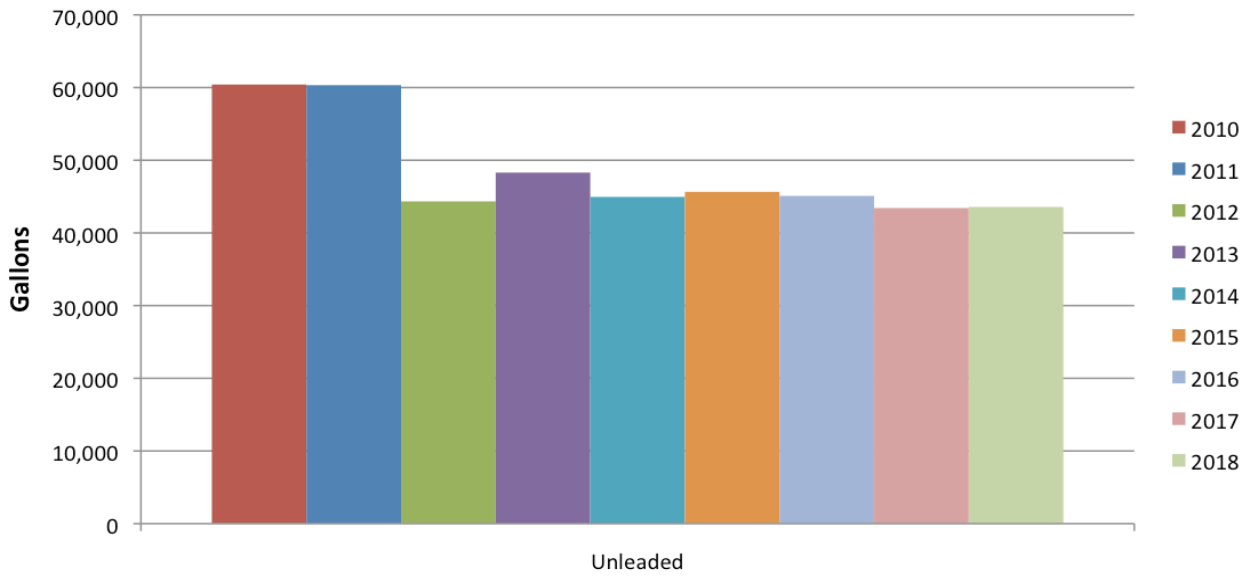
TMV Government Natural Gas Use 2010-2018



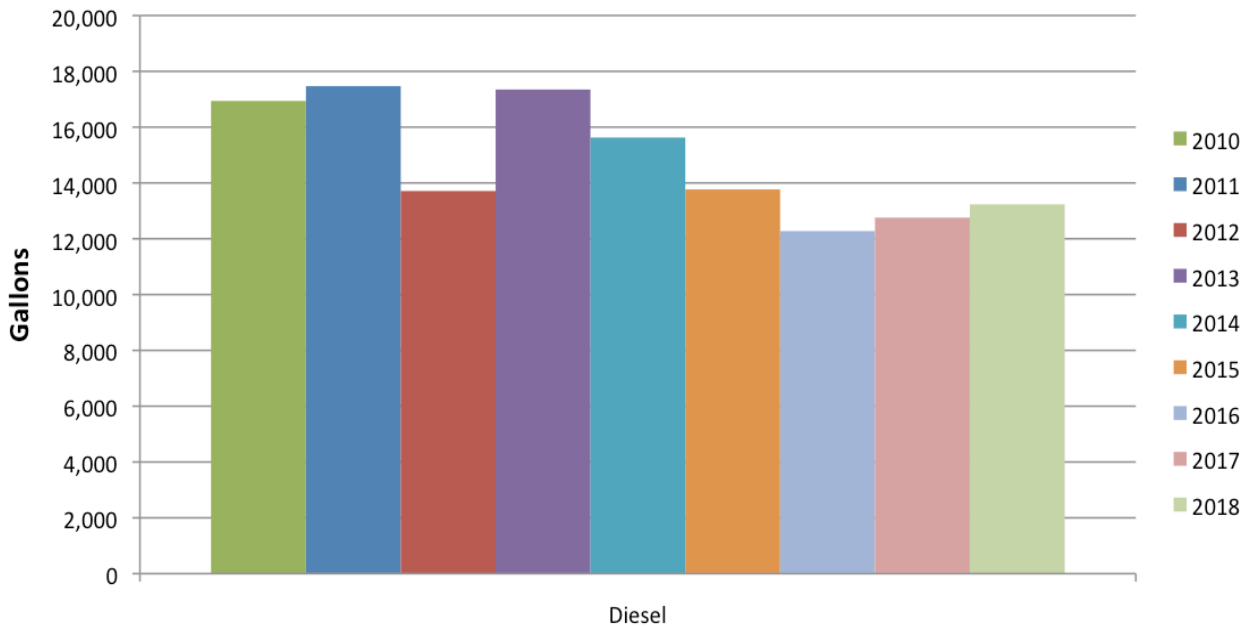
TMV Government Natural Gas Cost 2010-2018



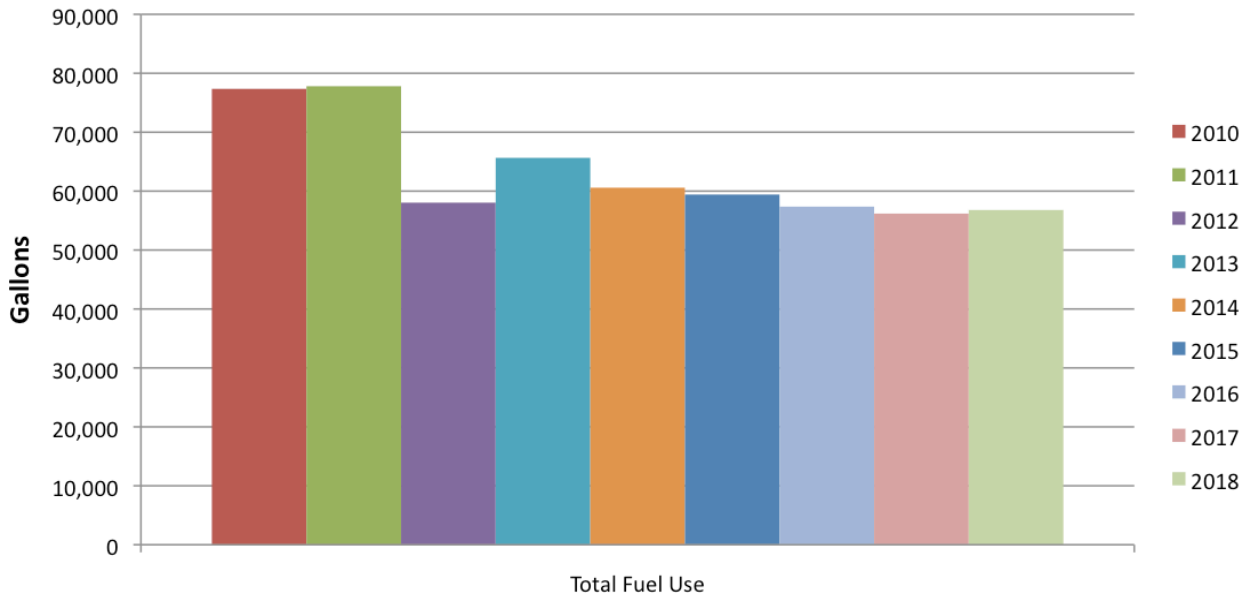
TMV Gasoline Use 2010-2018



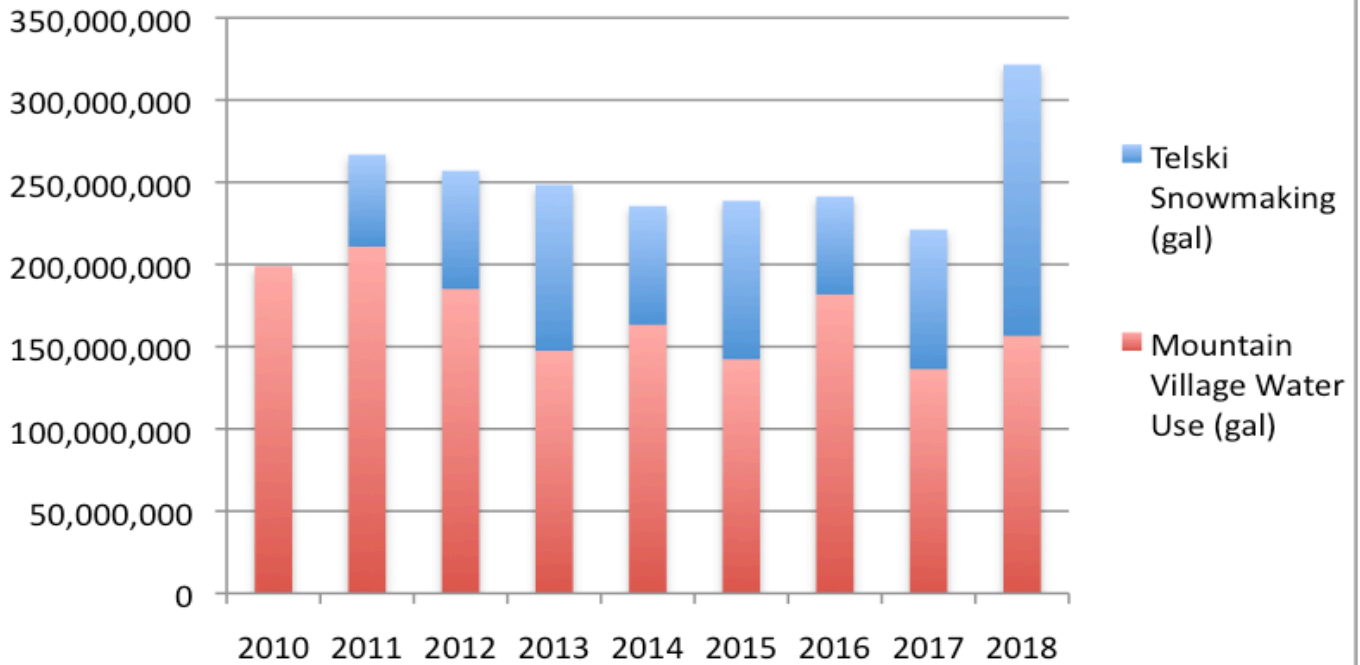
TMV Diesel Use 2010-2018



TMV TOTAL FUEL USE 2010-2018

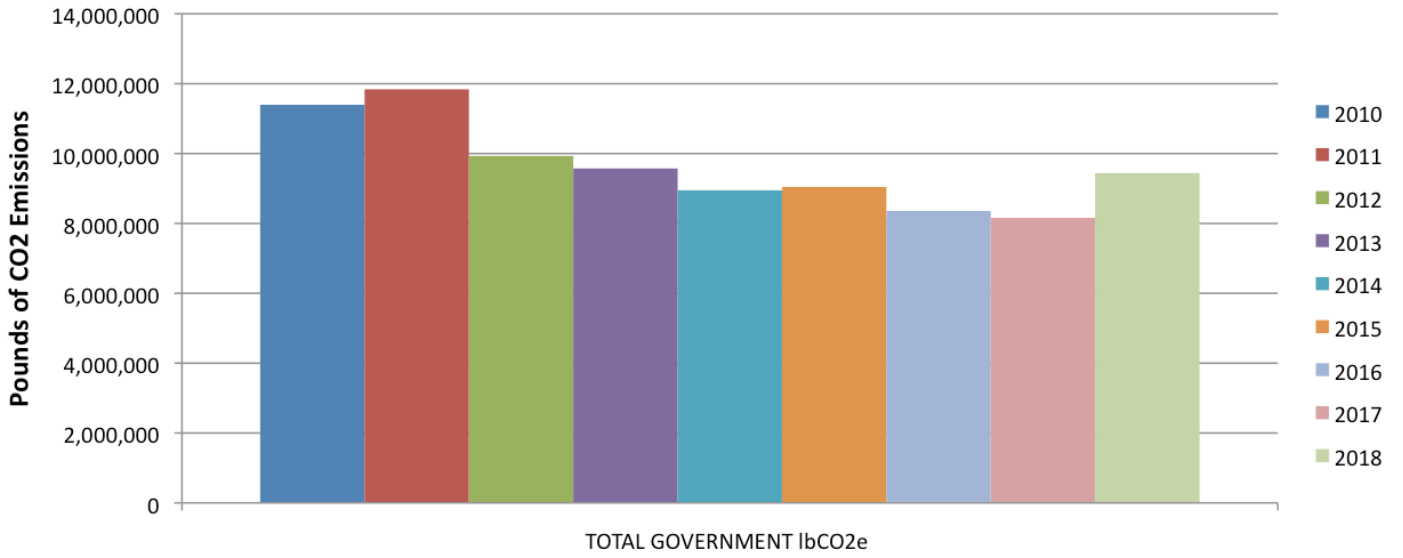


Mountain Village Water Supply

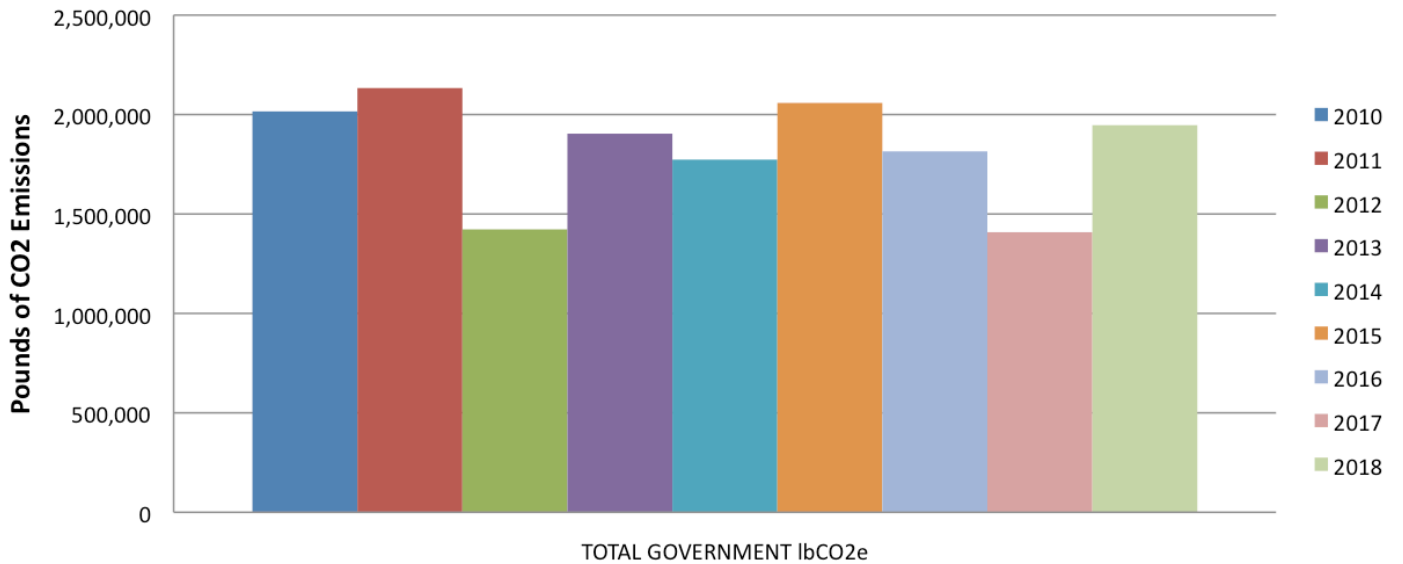


*2010 Snowmaking water data not available

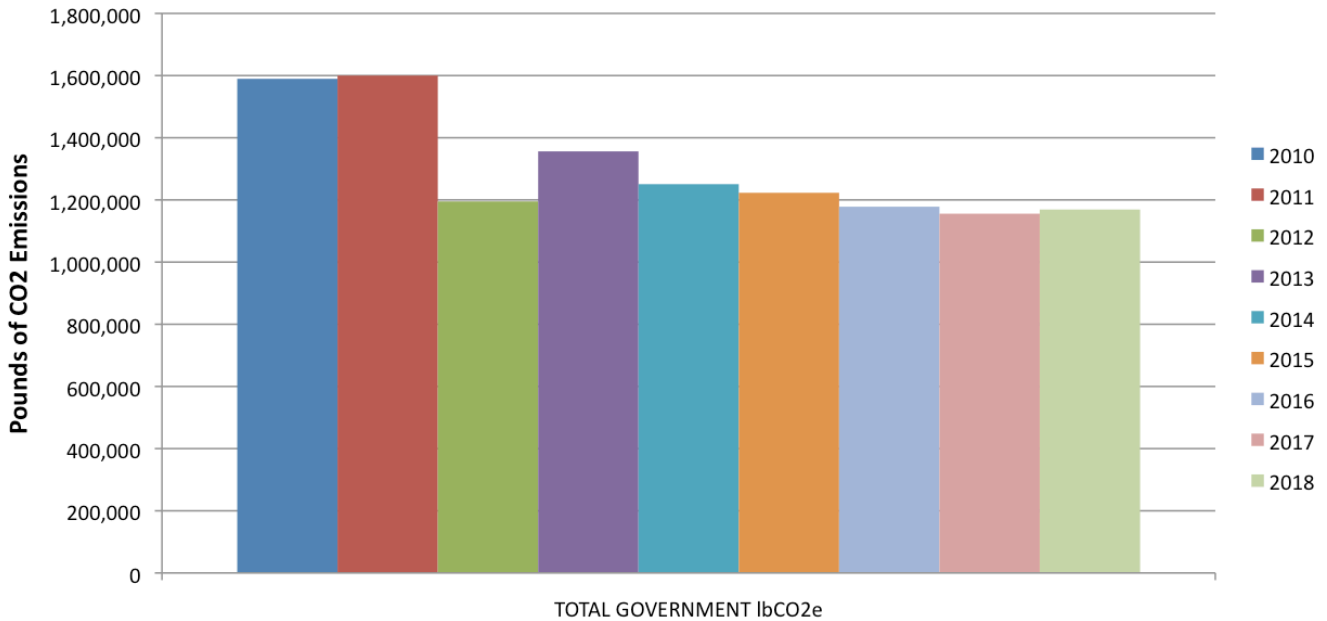
Government Electricity CO2 Emissions 2010-2018



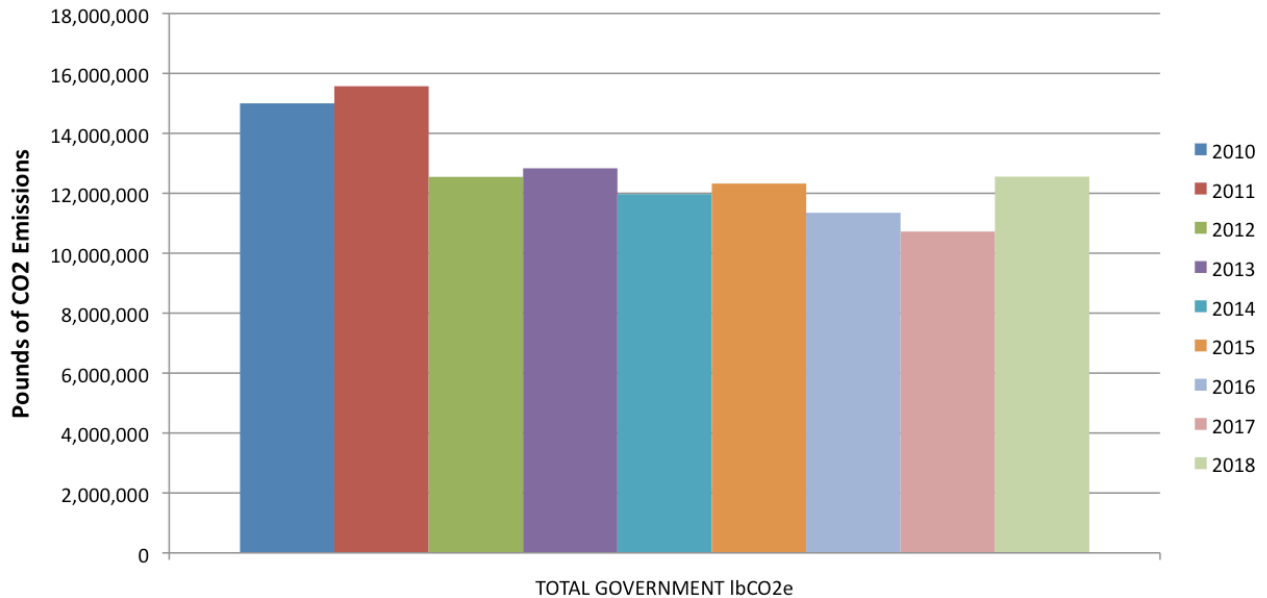
Government Natural Gas CO2 Emissions 2010-2018



Government Fuel CO2 Emissions 2010-2018



TOTAL Government CO2 Emissions 2010-2018



Conversion Factors Used:

TriState (SMPA): 2.2 lb CO2e/kWh (pre-2012) 1.96 lbCO2d/kWh (2012) 1.93 lbCO2e/kWh (2013)
 1.99 lbCO2e/kWh (2014) 1.871 lbCO2e/kWh (2015) 1.776 lbCO2e/kWh (2016)
 1.60 lbCO2e/kWh (2017)

Black Hills Energy: 11.68 lbCO2e/therm **Source Gas (2010-2016):** 11.88 lbCO2e/therm

Gasoline: 20.02 lbCO2e/gallon (tail-pipe emissions only per government GHG protocol)

Diesel: 22.44 lb CO2e/gallon (tail-pipe emissions only per government GHG protocol)

Professional Services Agreement Between the Town and EcoAction Partners 2019 Services

This Professional Services Agreement is made and entered into this _____ day of July, 2019, by and between the Town of Mountain Village, a home rule municipality and political subdivision of the state of Colorado (the "Town") and Eco Action Partners (the "Contractor").

RECITALS

1. The Town has an interest in assessing its community green-house gas emissions inventory ("GHG") and other sustainability initiatives
2. Contractor has the expertise and knowledge to assist the Town in conducting a GHG emissions inventory using governmental, business and community utility data, values for food, waste, transportation and other emission sources for the 2018 calendar year.
3. Contractor has expertise in managing a variety of sustainability programs and initiatives that will assist the Town of Mountain Village in meeting established GHG reduction goals.
4. The Town and Contractor enter into this agreement pursuant to the terms and conditions set forth herein.

Now therefore, in consideration of the mutual promises and conditions set forth herein, the parties agree as follows:

1. Contract Documents. The Contract Documents are defined as:
 - a. The Agreement
 - b. Contractor's proposal (Exhibit A)

Any conflict between the Contract Documents shall be resolved in favor of this Agreement.

The Contractor acknowledges that it is fully familiar with all of the terms of the Contract Documents, the Agreement, and the conditions under which the contract work is to be performed.

2. Work. The Contractor agrees to perform Scope of Work as set forth below, which shall result in a variety of regional sustainability offerings

that reduce energy and waste for the Mountain Village government and community, and the production of a Mountain Village Greenhouse Gas Emissions Inventory (the "Project"). Contractor will also take input and guidance from the Mountain Village Green Team in the work established.

3. Scope of Work. Contractor shall:
 - a. Update the comprehensive Mountain Village communitywide GHG inventory and provide an update to the report in 2019 to include the 2018 data. This task shall include an annual community energy analysis. Contractor shall present this report to the Town Council along with recommendations for actions to reduce GHG emissions at a regularly scheduled Town Council meeting within the 2019 calendar year (the "Town Council Presentation"). The Contractor shall provide a draft report to the Town's Green Team at a Green Team meeting prior to the date of the Town Council Presentation. The Contractor shall update allocations per jurisdiction for the overall community's regional assets, as necessary.
 - b. Complete and present the 2018 Mountain Village Government Energy Use and Greenhouse Gas report, in conjunction with Town Council Presentation.
 - c. Provide Regional Programs for the Town of Mountain Village government and community including but not limited to:
 - Sneffels Energy Board coordination of meetings, notes and communication on GHG emissions reduction efforts;
 - Conduct the Regional GHG Inventory;
 - Coordinate and operate the Greenlights LED Program
 - Present annual program highlights to Town Council
 - Provide telephone and in-person support for community members on the following programs:
 1. SMPA Income Qualified Program - must reach the goal of creating a Mountain Village specific outreach plan to aid participants in qualifying for SMPA IQ programs to be completed within the 2019 calendar year;
 2. Green Business Certification - must reach goal of certifying three (3) or more Mountain Village business in the 2019 calendar year;

3. Assistance with C-PACE - Provide appropriate businesses with C-PACE financing information for a large scale energy efficiency improvements and report progress in the Mountain Village annual presentation during the 2019 calendar year;
 4. Truth or Dare School Program - must reach Telluride Intermediate school students and other regional schools, with Truth or Dare Sustainability Challenge; track results and report on program impact during the annual Town presentation within the 2019 calendar year;
 5. Composting and recycling guidance including State grants available, regional partnerships, and updates from CDPHE
 6. Maintain a website with resources for the regional community, that includes links to MV town programs.
 7. Outreach through monthly newsletters.
- d. Track Town and community-wide GHG data for the Town for the 2018 calendar year.
4. Produced Materials. All materials and products that are produced for the Project shall be considered property of the Owner except any underlying software algorithms which may be proprietary information.
 5. Contract Price. The Town shall pay the Contractor a total not to exceed price for the completion of the Project (not including the Additional Services provided for below) in the amount of Thirteen Thousand Eight Hundred and Fifty Dollars (\$13,850) (the Contract Price) in quarterly installments for the completion of the Scope of Work and delivery of the final report on the Project.
 6. Time of Completion. The commencement date of the contract shall be January 1, 2019. The Contractor shall provide services within this contract through December 31, 2019.
 7. Additional Services. Exhibit A provides for Contractor to provide support for the Mountain Village Green Team. However, this portion of the Scope of Work shall be considered "Additional Services" and shall only be provided on an as-needed basis by the Town. In the event the

Town determines that the Town needs support services as shown in Exhibit A for the Green Team, the Town shall in writing request such additional services. Payment for the Additional Services shall not be included in the Contract Price and shall be billed and paid upon completion of the Additional Services. In no event shall the Additional Services exceed forty-seven (47) hours or \$1,785 in billed fees for the Additional Services.

8. Contractor's Default. If Contractor should default in the performance of its work or should otherwise commit any act which causes delay to the Project, Contractor shall be liable for all losses, costs, expenses, liabilities and damages, including consequential damages and liquidated damages, sustained by the Owner or for which Contractor may be liable to any other party because of Contractor's default.
9. Liens. Contractor shall promptly pay all bills for labor and material performed and furnished by others in connection with the construction, furnishing and equipping of the improvements and performance of the Work. Provided that Contractor has been paid by Owner all sums (or the applicable portion thereof) due to Contractor pursuant to this Agreement. Colorado Statutes do not provide for any right of liens against public buildings. In lieu thereof C.R.S. 38-26-107 provides for adequate relief for any claimant.
10. Notice to Cure. If Contractor at any time refuses or neglects properly and diligently prosecute the work covered by this Agreement, or is otherwise guilty of a material breach of a provision of this Agreement, and fails within five (5) business days after receipt of written notice to commence and continue satisfactory correction of such default with diligence and promptness, then Owner, without prejudice to any rights or remedies, shall have the right to declare a default of this Agreement by Contract and proceed with any remedy available to the owner including contracting with another entity to perform the work.
11. Termination. If Contractor fails to commence and satisfactorily continue correction of a default within five (5) business days after receipt by Contractor of the notice issued under Section 14, then

Owner may terminate Contractor's right to perform under this Agreement and use any materials, implements, equipment, appliances or tools furnished by or belonging to Owner or complete Contractor's work without any further compensation to Contractor for such use. In such case, Contractor shall be entitled to no further payment until the balance of Contractor's Work has been completed. At that time, all of the costs incurred by Owner in performing Subcontractor's Work, including a markup of fifteen percent (10%) for overhead and profit on such expense, plus actual attorneys' fees, shall be deducted from any monies due or to become due Contractor. Contractor shall be liable for the payment of any amount by which such expenses may exceed the unpaid balance of the Contract Price.

12. Termination for Convenience. Owner may at any time and for any reason terminate Contractor's services and work at Owner's convenience. Cancellation shall be by service of written notice to Contractor's place of business. Upon receipt of such notice, Contractor shall, unless the notice directs otherwise, immediately discontinue the work and placing of orders for materials, facilities and supplies in connection with the performance of this Agreement, and shall, if requested, make every reasonable effort to procure cancellation of all existing orders or contracts upon terms satisfactory to Owner or, at the option of Owner, give Owner the right to assume those obligations directly, including all benefits to be derived therefrom. Contractor shall thereafter do only such work as may be necessary to preserve and protect the work already in progress and to protect material and equipment on the job site or in transit thereto. Upon such termination, Contractor shall be entitled to payment only as follows: (1) the actual cost of the work completed in conformity with this Agreement, plus (2) such other costs actually incurred by Contractor and approved by Owner, plus (3) ten percent (10%) of the cost of the work referred to in items (1) and (2) above for overhead and profit. There shall be deducted from such sums as provided in this subparagraph the amount of any payments made to Contractor prior to the date of the termination of this Agreement. In no event shall payment due hereunder exceed the amount due in relation to the percentage of completion of the Project.

13. Grounds for Withholding Payment. Owner may withhold or, on account of subsequently discovered evidence, nullify the whole or part of any payment to the extent necessary to protect Owner from loss, including costs and actual attorneys' fees, on account of (1) defective work not remedied; (2) claims filed or reasonable evidence indicating probable filing of claims by third parties; (3) failure of Contractor to make payments properly to its subcontractors or for material, labor or fringe benefits; (4) a reasonable doubt that this Agreement can be completed for the balance then unpaid; (5) damage to Owner; (6) penalties assessed against Contractor or Owner for failure of Contractor to comply with state, federal or local laws and regulations; or (7) any other ground for withholding payment allowed by state or federal law, or as otherwise provided in this Agreement. When the above matters are rectified, such amounts as then due and owing shall be paid or credited to Contractor.
14. Bankruptcy. In the event that Contractor declares bankruptcy, or any similar event such as the appointment of a receiver for Contractor or upon Contractor making an assignment for the benefit of creditors, or if Contractor seeks protection under the Bankruptcy Code or commits any other act of insolvency, Owner may, absent any applicable legal limitation, terminate this Agreement upon giving two (2) business days written notice, by certified mail, to Contractor, its trustee, and its surety, if any.
15. Indemnification. The Contractor agrees to indemnify, defend and hold harmless, the Owner, its partners, subsidiaries and affiliates, their respective agents, officers, directors, servants, employees, owners, successors and assigns of and from any and all liability, claims, liens, demands, actions and causes of action whatsoever and including reasonable attorney's fees and costs arising out of or related to any loss, cost damage or injury, including death of any person or damage to property of any kind caused by the Contractor, its employees, agents suppliers or subcontractors, while engaged in any activity associated with the Project whether contractual or otherwise.
16. Risk of Loss. All work on the Project covered by this Agreement done on-site or in preparing or delivering materials, excluding materials

supplied by Owner under this Agreement or equipment, or any or all of them, to the site shall be at the risk of Contractor until the completed work is accepted by the Owner.

17. Insurance. Before any work at the site is started, Contractor shall deliver to TMV certificates of insurance (and other evidence of insurance or any additional insured TMV may reasonably request) which Contractor is required to purchase and maintain as set forth below:

1. Workers' Compensation and Employer's Liability as required by statute. Employer's Liability coverage is to be carried for a minimum limit of \$100,000 for each accident.
2. Automobile Liability for limits not less than \$500,000 combined single limit for bodily injury and property damage for each occurrence. Coverage shall include owned, non-owned and hired automobiles.
3. Commercial General Liability for limits not less than \$1,000,000 single limit for bodily injury and property damage for each occurrence and \$2,000,000 in aggregate. Coverage shall include blanket contractual, broad form property damage, products and completed operations Contractor's protective endorsements.
4. Contractor must include as additional insured's TMV, its agents, employees and assigns.
 - a. Policies are primary and noncontributory for all claims arising from Contractor's work

18. Compliance. The Contractor shall comply with all applicable safety precautions used in the industry or imposed by applicable laws and regulations in order to adequately protect the Project and avoid injury and damage to persons or property. The Contractor shall be solely responsible for any damage to persons or property resulting from Contractor's failure to exercise safety precautions, negligence or

misconduct of Contractor or Contractor's employees, agents, subcontractors and suppliers. Contractor shall notify Owner within twenty-four (24) hours of the occurrence of any injury or property which may occur on the Project. Contractor accepts sole responsibility for providing a safe place to work for its employees, for adequacy of and required use of all safety equipment and for full compliance with the any applicable laws and regulations.

19. Assignment. Contractor shall not, without the written consent of the Owner, assign or transfer any portion of this Agreement or the work required by this Agreement to a third party.

20. Public Contract for Services. The Contractor qualifies as a "contractor" pursuant to §8-17.5- 101(2) C.R.S. and the Contractor hereby certifies that, as of the date hereof, the CONTRACTOR does not knowingly employ or contract with an illegal alien, and the CONTRACTOR has participated or attempted to participate in the "Basic Pilot Program" (as defined in §8-17.5-101(1), C.R.S.) in order to verify that the CONTRACTOR does not employ any illegal aliens. In compliance with §8-17.5-101(2) C.R.S., it is hereby agreed:

- (a) The CONTRACTOR shall not knowingly employ or contract with an illegal alien to perform work described in this Agreement (defined as "Contractor Services" for the purpose of this section) or enter into a contract with a subcontractor that fails to certify to the CONTRACTOR that the subcontractor shall not knowingly employ or contract with an illegal alien to perform the Contractor Services.
- (b) The CONTRACTOR has verified or attempted to verify through participation in the Basic Pilot Program that it does not employ any illegal aliens or shall apply to participate in the Basic Pilot Program every three months until the CONTRACTOR is accepted or until termination of this Agreement, whichever is earlier.
- (c) The CONTRACTOR shall not use the Basic Pilot Program procedures to undertake pre- employment screening of job applicants while performing the Contractor Services.

- (d) If the CONTRACTOR obtains actual knowledge that a subcontractor performing Contractor Services knowingly employs or contracts with an illegal alien, the CONTRACTOR shall be required to: (i) notify the subcontractor and the CLIENT within three days that the CONTRACTOR has actual knowledge that the subcontractor is employing or contracting with an illegal alien; and (ii) terminate the subcontract with the subcontractor if within three days of receiving the notice required pursuant to subparagraph
 - (i) the subcontractor does not stop employing or contracting with the illegal alien; except that the CONTRACTOR shall not terminate the contract with the subcontractor if during such three days the subcontractor provides information to establish that he subcontractor has no knowingly employed or contracted with an illegal alien.
- (e) The CONTRACTOR shall comply with any reasonable request by the Department of Labor and Employment made in the course of an investigation that such department is undertaking pursuant to §8-17.5-102(5) C.R.S.

- 21. Independent Contractor. Both parties expressly agree and acknowledge that Contractor is an independent contractor and this Agreement shall not be construed in any way to create any type of employee/employer relationship, master/servant relationship, partnership or joint venture.
- 22. Costs and Attorney's Fees. In the event of any dispute, including but not limited to litigation, arbitration or mediation, the prevailing party shall be entitled to receive all reasonable costs, including reasonable attorney's fees.
- 23. Amendment. This Agreement shall only be amended by a writing signed by both parties. Verbal amendments shall not be valid under any circumstances.
- 24. Binding. This Agreement shall be binding upon and inure to the benefit of both parties successors and assigns.

25. Venue and Choice of Law. This Agreement shall be construed and interpreted according to the laws of the State of Colorado. The parties hereby consent to venue lying exclusively with the courts of San Miguel County, Colorado.

26. Complete Agreement. This Agreement represents the complete understanding of the parties regarding the subject matter of this agreement and supersedes any prior agreements, bids or understandings of the parties hereto.

Executed the date first written above:

OWNER:

TOWN OF MOUNTAIN VILLAGE:

By: _____
Kim Montgomery, Town Manager

Approved as to Form:

Jim Mahoney, Assistant Town Attorney

ECO ACTION PARTNERS:

By: _____

Authorized Agent

Exhibit A Scope of Work: MV Green Team budget with EcoAction Partners

EcoAction Partners Scope of Work for Mountain Village	Estimated Hours	Budget
These services are specific to Mountain Village:		
Mountain Village - Community GHG Emissions & Energy Use	90.0	\$5,550
- Presentations to Green Team & Town Council, including recommendations as discussed with MV staff		
- Community GHG Inventory Update - 2019 data		
- Annual Community Energy Analysis		
Analysis of Governmental Energy Use - 2019 data	8.0	\$600
- Government efficiency, renewable energy & offset project consulting as needed		
Mountain Village Green Team Support – UPON REQUEST ONLY	35.0	\$1,785
- Green Team & Staff meeting to support the items below: preparation of items, participation, follow-up		
MV Composting Incentive Program - Assistance to Applicants (est. 4hr/application, 3 applications) (to be approved per application received)	12.0	
Special GHG Project Calculations & Consulting (specific items listed below, ~10 hours each)		
a) Analysis of MV Solar Incentive Program		
b) Update Gondola GHG offset calculation		
c) Farm to Table Program: calculate GHG emissions savings		
d) MV Waste contract data: Analyze & Utilize annually collected data		

e) Regional calculation of the GHG benefits related to local affordable housing		
f) GHG Analysis of all existing MV heat trace incentive program		
g) Calculation of Solar HERS points tradeoff		
h) MV specific study on GHG emission comparison between snowmelt systems & shoveling / hauling		
These services are shared among regional governments:		
Regional GHG Inventory (without this activity, MV Community GHG Inventory is not feasible)	34.0	\$2,500
Regional GHG data sharing on EcoAP website (requested at MV Town Council Meetings)	5.0	\$400
Regional Energy & Waste Resource Organization Services		
- Government presentation updates on Programs	10.0	\$500
- Regional Energy & Waste Resource Organization for Governments & Community, including:	70.0	\$3,500
a) Website with resources for community (including links to MV programs)		
b) Monthly email newsletter		
c) Telephone & in-person support for community members on energy efficiency & renewable energy resources & financial incentives including: SMPA, Black Hills, state & federal tax programs, C-PACE, & Mountain Village programs)		
d) Recycling outreach information for region		
e) Participation in & sharing of information from related regional events, forums, and meetings.		
	22.0	\$800

<p>Sneffels Energy Board - coordination of meetings, notes, communication on GHG emissions reduction efforts</p>		
<p>- Sharing of statewide collaboration & resources to assist with local / regional incentives & projects</p>		
<p>Scope of Work Time Estimate and Total 2019 Green Team Budget with EcoAction Partners</p>	<p>286</p>	<p>\$15,635</p>
<p>EcoAction Partners rate for services varies based on several factors, including type of service provided, personnel involved, and whether service provided is shared among regional partners or jurisdiction-specific.</p>		

Waste Characterization Report

San Miguel County, Colorado

March – June 2019

1.0 Introduction

The U.S. Environmental Protection Agency (EPA) is working with local partners from San Miguel County, the Telluride Ski Resort, and local nonprofits to better understand the contribution of waste from non-resident rental properties to the overall waste footprint of San Miguel County. EPA conducted a waste characterization study for non-resident rental properties in San Miguel County to contribute to this understanding and help inform local decisions regarding food waste and recycling.

The study involved characterizing waste and separated recyclables from two locations: Franz Klammer Lodge in Mountain Village, Colorado and a waste shed in Telluride, Colorado, used by the Manitou Lodge, Manitou Riverhouse condominiums and Riverside condominiums. Waste was characterized during two separate field events. The first event was conducted from March 17-23, 2019, during the 2019 peak ski season. The second event was conducted from June 23-29, 2019, just following the Telluride Bluegrass Festival and prior to the Fourth of July holiday. The second event was chosen to represent one of the busier weeks of the summer season.

This document summarizes the findings from these waste characterization events. Section 2.0 of the document describes the activities performed during the two events. Section 3.0 presents the findings from the study, including analyses of total weight and waste composition, with a focus on food waste and recyclable material. Section 4.0 compares the findings from this study to those from the Sneffels Waste Diversion Planning Project, a waste characterization study completed for San Miguel County in 2016. Section 5.0 concludes the document with a preliminary discussion of opportunities to reduce food waste and improve recycling associated with non-resident rental properties in San Miguel County.

The study was led by CSRA LLC, a General Dynamics Information Technology company, working with EPA's Office of Research and Development (ORD), EPA Region 8, and the Southwest Institute for Resilience, Placerville, Colorado. The work was completed under EPA Contract EP-C-15-012, Work Assignment 03-15, Organic Materials Management.

2.0 Description of Waste Characterization Events

The waste characterization study was conducted according to the method outlined in American Society for Testing and Materials (ASTM) Standard Test Method for Determination of the Composition of Unprocessed Municipal Solid Waste, D5231-92(2016). Prior to the field events, a Quality Assurance Project Plan (QAPP) and Characterization Protocol and Data Collection Plan were developed to guide field and data analysis activities. Please refer to the QAPP and Data Collection Plan for a more detailed description of the study protocol, including definitions of waste component categories.

All waste characterization activities were conducted in a transfer station operated by Bruin Waste Management in Mountain Village, Colorado. The field team characterized waste and separated

recyclables brought to the transfer station by Bruin Waste Management from the Franz Klammer Lodge in 3-cubic yard (cy) dumpsters. For the Telluride location, the field team bagged waste and separated recyclables contained in the Manitou waste shed and transported the material to the transfer station twice daily. Field measurements and observations were documented in standardized data collection forms and in field notebooks. Detailed field reports were developed for each event.

During the first field event (peak ski season), nine 3 cy dumpsters containing waste and six 3-cy dumpsters containing separated recyclables were received from the Franz Klammer Lodge. Seven of the nine waste dumpsters were fully characterized, including sorting into component categories and weighing each component. The waste in two of the dumpsters was weighed but not sorted due to time and logistical constraints associated with the use of the transfer station. Bagged waste and separated recyclables were collected from the Manitou waste shed and transported to the transfer station. All waste from the Manitou waste shed was fully characterized.

During the second field event (busy summer season), eight 3 cy dumpsters containing waste and six 3 cy dumpsters containing separated recyclables were received from the Franz Klammer Lodge. All of the waste dumpsters were fully characterized. Bagged waste and separated recyclables were collected from the Manitou waste shed and transported to the transfer station, and all waste from the waste shed was fully characterized.

Appendix Tables A1 and B1 summarize the material received and collected during the two events, approximate volumes, and characterization activities completed.

3.0 Waste Characterization

3.1 Total Weight Analysis – Waste and Separated Recyclables

For waste that was fully characterized, total weight was calculated by summing component category weights. For the two waste dumpsters collected from the Franz Klammer Lodge that were not fully characterized during the first event, the material was weighed to obtain total weight but was not sorted into component categories. For separated recyclables collected from both locations, the material was weighed for total weight. Separated recyclables were not sorted. Table 1 presents a summary of the total weight analysis. Appendix Tables A2 and B2 provide a more detailed summary of the total waste analysis.

Table 1. Summary of Total Waste Analysis

Measure	Franz Klammer Lodge			Manitou Waste Shed		
	Event 1	Event 2	Combined	Event 1	Event 2	Combined
Total Waste (lbs)	2,877.1	2,206.1	5,083.2	355.8	420.8	776.6
Total Separated Recyclables (lbs)	954.1	898.4	1,852.5	14.3	61.1	75.4
Total Material	3,831.2	3,104.5	6,935.7	370.1	481.9	852.0
Percent Separated Recyclables	24.9%	28.9%	26.7%	3.9%	12.7%	8.8%

3.2 Waste Composition Analysis

Waste was sorted and separated into component categories based on the QAPP and Characterization Protocol and Data Collection Plan. Total weights were calculated for each component category and were used to calculate weight proportions (mass fraction) for each component. Table 2 presents a summary of the waste composition analysis. Appendix Tables A3 and B3 present event-specific summaries of the waste composition analysis.

Table 2. Summary of Waste Composition Analysis

Waste Component Category	Waste Composition					
	Franz Klammer Lodge			Manitou Waste Shed		
	Event 1	Event 2	Combined	Event 1	Event 2	Combined
Glass containers*	9.4%	7.0%	8.2%	14.2%	13.8%	14.0%
Other glass	0.3%	1.7%	1.0%	0.1%	1.1%	0.7%
Ferrous metal*	0.5%	0.9%	0.7%	1.2%	0.6%	0.9%
Aluminum*	0.9%	1.1%	1.0%	2.2%	1.5%	1.8%
Other metal	0.1%	0.3%	0.2%	0.1%	0.1%	0.1%
Plastic 1 & 2*	3.2%	2.4%	2.8%	6.5%	1.7%	3.9%
Plastic film	3.7%	3.4%	3.5%	4.6%	2.5%	3.5%
Other plastic	5.2%	5.3%	5.2%	5.9%	3.4%	4.6%
Recyclable paper*	5.1%	3.7%	4.4%	7.1%	3.2%	5.0%
Cardboard and boxboard*	7.1%	4.6%	5.9%	10.9%	2.7%	6.4%
Other paper, compostable	6.6%	6.7%	6.6%	8.5%	5.8%	7.0%
Plastic-coated paper	3.8%	3.2%	3.5%	2.5%	2.6%	2.6%
Other paper	0.1%	0.2%	0.1%	0.1%	0.0%	0.1%
Recoverable food	1.3%	2.3%	1.7%	0.5%	1.7%	1.2%
Compostable food waste	37.1%	31.9%	34.6%	27.5%	27.4%	27.4%
Other compostable organic waste	0.3%	4.8%	2.4%	0.0%	0.4%	0.2%
Wood	2.2%	7.7%	4.8%	0.1%	6.9%	3.8%
Textiles	1.4%	1.4%	1.4%	1.0%	2.4%	1.8%
Electronics	0.1%	0.9%	0.5%	0.3%	0.5%	0.4%
Special/hazardous waste	6.8%	8.6%	7.7%	5.0%	21.1%	13.8%
Other waste	4.8%	2.0%	3.4%	1.5%	0.7%	1.1%
Residuals	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

* Materials currently accepted for recycling by waste haulers serving San Miguel County

3.3 Summary of Findings

Preliminary observations based on the results of the first waste characterization events are summarized below. More detailed observations and photo documentation is presented in the Event 1 Field Log.

- About 25% - 30% of materials received from the Franz Klammer Lodge were separated recyclables. The total recycling rate for properties using the Manitou waste shed was much lower (about 4% - 13%). The recycling rate at the Franz Klammer Lodge was relatively consistent between the first and second events. The recycling rate at the Manitou properties was higher during the summer season event. The recycling containers at the Manitou waste shed were relatively inaccessible during the initial weekend of the first event due to snow in front of the waste shed, which could account for the low recycling rate during this period.
- The results suggest that there is significant room for increasing recycling rates at these two locations without changes to existing waste policies and regional recycling infrastructure. If recyclable glass, metal, plastic and paper (i.e., the forms of these materials currently accepted for recycling by waste haulers serving the area) had been separated rather than discarded, recycling rates would have increased from 26.7% to 42.0% and 8.8% to 37.6% at the Franz Klammer Lodge and properties associated with the Manitou waste shed, respectively.
- The two waste streams contained significant proportions of compostable food waste.
 - Compostable food waste made up the largest share of waste at both locations. Compostable food waste disposed of at the Franz Klammer Lodge made up about 34.6% of the total waste stream (combined across the two events). The share of compostable food waste at the Manitou waste shed was lower, about 27.4%.
 - Compostable food waste made up a greater share of the waste during the ski season event at the Franz Klammer Lodge (37.1%) relative to the summer event (31.9%). The share of waste that was compostable was consistent across the two events for the Manitou waste shed.
 - The results suggest that compostable food waste is larger share of the waste stream during the weekend transition at the Franz Klammer Lodge. For the summer event, compostable food made up 38% of the weekend waste stream and 27% of the weekday waste stream.
- The two waste streams contained significant proportions of total compostable material, including compostable food waste, compostable paper, and other compostable organics. Accounting for these three categories of compostable material, the total share of compostable material in the waste streams at the Franz Klammer Lodge and Manitou waste shed (combined events) were 44% and 35%, respectively.
- As a proportion of total waste, recoverable food (food that could have been recovered if it had not been discarded as waste) was relatively low. However, 80 pounds of unused, potentially recoverable food was discarded from the Franz Klammer Lodge over the two weeks during which the study was conducted. This suggests that resort facilities in the area represent a potentially significant source of food that could be donated to local food pantries.

- Other than significantly higher shares of compostable food waste in the Franz Klammer Lodge waste stream, the composition of the two waste streams was relatively similar. The Manitou waste stream had proportionally higher shares of glass containers during both events. Observed higher shares of recyclable metal, plastic, and paper in the Manitou waste during the first event were not observed during the second event. This reinforces the idea that recycling at the Manitou was hindered due to the inaccessibility of the recycling containers in the waste shed during the ski season event.

4.0 Comparison to Sneffels Study

In 2016, a waste characterization study was completed in San Miguel County as part of the Sneffels Waste Diversion Planning Project.¹ This prior study included sampling of waste received at a regional landfill from communities in San Miguel County and are thought to be representative of the waste generated by the permanent resident population. The results of the current study were compared to the results of the previous study to understand how the composition of waste from non-resident rental properties might differ from the composition of waste from the permanent resident population. Table 3 compares the results of the two studies.

Table 3. Comparison of Results of Previous and Current Waste Characterization Studies

Waste Component Category*	Waste Composition (weighted average across field events)		
	Sneffels Waste Diversion Study**	Franz Klammer Lodge	Manitou Waste Shed
Glass***	5.1%	9.2%	14.6%
Metal***	5.1%	1.9%	2.8%
Recyclable plastic***	4.9%	2.8%	3.9%
Other plastics	11.2%	8.8%	8.0%
Cardboard, recyclable paper***	19.7%	10.3%	11.4%
Other paper	3.1%	10.3%	9.7%
Compostable food and yard waste	34.4%	38.8%	28.8%
Wood	1.5%	4.8%	3.8%
Textiles	0.0%	1.4%	1.8%
Special/hazardous	14.2%	7.7%	13.8%
Residue	0.8%	3.9%	1.5%

* Component categories defined based on Sneffels Waste Diversion Study

** Only sampling events including sample sizes of 200 pounds were included in this analysis

*** Categories aligned with materials currently accepted for recycling

¹ EcoAction Partners (2016). Sneffels Waste Diversion Planning Project, Final Report. Accessed July 31, 2019 at https://www.colorado.gov/pacific/sites/default/files/DEHS_RREO_FY16Report_EcoActionPartners.pdf

The results of this comparison suggest that the following:

- The proportion of the waste stream characterized as food waste is similar for the non-resident rental properties included in this study and San Miguel County as a whole. Proportions at the Franz Klammer Lodge were relatively higher and proportions at the Manitou properties were relatively lower than those observed in the Sneffels project.
- The proportion of the waste that is recyclable material was relatively higher in the Sneffels study than that observed in the current study. Using the categories developed for the Sneffels study, the county-wide share of waste that is recyclable could be on the order of 35% versus 24% and 33% for the Franz Klammer Lodge and Manitou waste shed, respectively.
- Waste from the properties included in this study had a relatively higher proportion of glass and “other paper” and relatively lower proportions of cardboard and recyclable paper, metal, and “other plastics” compared to the Sneffels study.

When comparing these studies, it is important to recognize that they used different methodologies. The Sneffels study involved sampling waste from trucks at the landfill site. The current study characterized complete containers (e.g., dumpsters), and did not rely on sampling. Also, while the current study defined component categories to align as closely as possible with the Sneffels categories, differences in how the categories were defined and could affect the comparison.

If a more complete analysis of potential differences in the waste composition is required, more in-depth discussions with the participants in the Sneffels study (to better understand the methodology) and/or an additional characterization study of the permanent resident waste using the ASTM method could be warranted.

5.0 Conclusions

The results of this waste characterization study suggest that there are significant opportunities to increase recycling and reduce food waste generated at non-resident rental properties in Mountain Village and Telluride, Colorado. These outcomes could be accomplished by implement community-based social marketing strategies and other informational, infrastructural, or preventative strategies to affect the behavior of renters/vacationers, property managers, and others involved in maintaining non-resident rental properties (e.g., housekeeping staff, landscapers).

The study also provides useful information for helping local officials and landfill/waste management operators assess and evaluate options for increased, post-consumer food and compostable materials waste diversion, including strategies designed to accommodate the large fluctuations in waste volume and composition associated with low and high seasons in Telluride and Mountain Village, Colorado.

Appendix A

Event 1 (Ski Season) Summary Tables

Table A1. Summary of Material Collected and Characterized – Event 1

Container ID	Container type	Material	Approx. Volume (cy)	Collection Date	Time of week represented	Sorted?	Sort/weigh date(s)
Franz Klammer Lodge – Waste							
FKL-W1	Dumpster	waste	3.5	3/17/19	weekend	Yes	3/17 & 3/19/19
FKL-W2	Dumpster	waste	3.5	3/17/19	weekend	Yes	3/20 & 3/21/19
FKL-W3	Dumpster	waste	3.5	3/17/19	weekend	Yes	3/21/19
FKL-W4	Dumpster	waste	3.5	3/18/19	weekday	Yes	3/20/19
FKL-W5	Dumpster	waste	3.0	3/19/19	weekday	Yes	3/19/19
FKL-W6	Dumpster	waste	3.0	3/20/19	weekday	No	3/22/19
FKL-W7	Dumpster	waste	2.3	3/20/19	weekday	Yes	3/22/19
FKL-W8	Dumpster	waste	1.5	3/21/19	weekday	Yes	3/22/19
FKL-W9	Dumpster	waste	2.3	3/22/19	weekday	No	3/22/19
Total Estimated Volume (cy)			26.0				
Franz Klammer Lodge – Recycling							
FKL-R1	Dumpster	recycling	3.5	3/17/19	weekend	No	3/17/19
FKL-R2	Dumpster	recycling	3.5	3/18/19	weekday	No	3/18/19
FKL-R3	Dumpster	recycling	3.0	3/19/19	weekday	No	3/20/19
FKL-R4	Dumpster	recycling	3.0	3/20/19	weekday	No	3/20/19
FKL-R5	Dumpster	recycling	3.0	3/21/19	weekday	No	3/21/19
FKL-R6	Dumpster	recycling	3.0	3/22/19	weekday	No	3/22/19
Total Estimated Volume (cy)			19.0				
Manitou Waste Shed – Waste							
MNT-W1	Bagged	waste	3.4	3/18/19	mixed	Yes	3/18/19
MNT-W2	Bagged	waste	2.3	Various	mixed	Yes	3/22/19
Total Estimated Volume (cy)			5.7				
Manitou Waste Shed – Recycling							
MNT	bagged/loose	recycling	0.2	Various	mixed	No	3/22/19
Total Estimated Volume (cy)			0.2				

Table A2. Summary of Total Weight Analysis

Event Day	Event Date	Waste		Recycling		Total Material	
		Container(s)	Weight	Container(s)	Weight	Weight	% Separated Recyclables
Franz Klammer Lodge							
Day 1	3/17/19	FKL-W1	142.6	FKL-R1	290.2	432.8	
Day 2	3/18/19	---	---	FKL-R2	148.3	148.3	
Day 3	3/19/19	FKL-W1, FKL-W5	538.1	---	---	538.1	
Day 4	3/20/19	FKL-W2, FKL-W4	541.7	FKL-R3, FKL-R4	237.5	779.2	
Day 5	3/21/19	FKL-W2, FKL-W3	718.6	FKL-R5	151.6	870.2	
Day 6	3/22/19	FKL-W7, FKL-W8	427.9	FKL-R6	126.5	554.4	
Day 6	3/22/19	FKL-W6, FKL-W9*	508.2	---	---	508.2	
Totals			2,877.1	---	954.1	3,831.2	24.9%
Manitou Waste Shed							
Day 2	3/18/19	MNT-W1	255.3	---	---	255.3	
Day 6	3/22/19	MNT-W2	100.5	MNT-R1	14.3	114.8	
Totals			355.8	---	14.3	370.1	3.9%

* Containers FKL-W8 and FKL-W6 were weighed but not sorted. The total proportion of waste fully characterized for the Franz Klammer Lodge was 3,368.9 lbs (82.3% of the total waste from this location).

Table A3. Summary of Waste Composition Analysis

Waste Component*	Weight Proportion (Mass Fraction)		
	Franz Klammer Lodge		Manitou Waste Shed
	Sorted-Only Waste	All Waste Estimate	
Glass containers	9.4%	9.1%	14.2%
Other glass	0.3%	0.4%	0.1%
Ferrous metal	0.5%	0.6%	1.2%
Aluminum	0.9%	0.9%	2.2%
Other metal	0.1%	0.1%	0.1%
Plastic 1 & 2	3.2%	3.1%	6.5%
Plastic film	3.7%	3.7%	4.6%
Other plastic	5.2%	5.1%	5.9%
Recyclable paper	5.1%	5.0%	7.1%
Cardboard and boxboard	7.1%	7.0%	10.9%
Other paper, compostable	6.6%	6.7%	8.5%
Plastic-coated paper	3.8%	3.7%	2.5%
Other paper	0.1%	0.1%	0.1%
Recoverable food	1.3%	1.1%	0.5%
Compostable food waste	37.1%	36.6%	27.5%
Other compostable organic waste	0.3%	0.2%	0.0%
Wood	2.2%	1.8%	0.1%
Textiles	1.4%	1.3%	1.0%
Electronics	0.1%	0.1%	0.3%
Special/hazardous waste	6.8%	7.0%	5.0%
Other waste	4.8%	6.3%	1.5%
Residuals	0.0%	0.0%	0.0%

* Please refer to the Characterization Protocol and Data Collection Plan for component category definitions.

Appendix B

Event 2 (Summer Season) Summary Tables

Table B1. Summary of Material Collected and Characterized – Event 2

Container ID	Container type	Material	Approx. Volume (cy)	Collection Date	Time of week represented	Sorted?	Sort/weigh date(s)
Franz Klammer Lodge – Waste							
FKL-W1	Dumpster	waste	2.3	6/23/19	weekend	yes	6/24/19
FKL-W2	Dumpster	waste	3.0	6/23/19	weekend	yes	6/23 & 6/24/19
FKL-W3	Dumpster	waste	3.0	6/24/19	weekend*	yes	6/25/19
FKL-W4	Dumpster	waste	3.0	6/25/19	weekday	yes	6/26/19
FKL-W5	Dumpster	waste	2.4	6/26/19	weekday	yes	6/26/19
FKL-W6	Dumpster	waste	2.7	6/27/19	weekday	yes	6/27/19
FKL-W7	Dumpster	waste	2.7	6/27/19	weekday	yes	6/27/19
FKL-W8	Dumpster	waste	0.8	6/28/19	weekday	yes	6/28/19
Total Estimated Volume (cy)			19.8				
Franz Klammer Lodge - Recycling							
FKL-R1	Dumpster	recycling	3.3	6/23/19	weekend	no	6/23/19
FKL-R2	Dumpster	recycling	3.3	6/24/19	weekend*	no	6/24/19
FKL-R3	Dumpster	recycling	3.0	6/25/19	weekday	no	6/27/19
FKL-R4	Dumpster	recycling	3.0	6/26/19	weekday	no	6/27/19
FKL-R5	Dumpster	recycling	3.0	6/27/19	weekday	no	6/27/19
FKL-R6	Dumpster	recycling	3.3	6/28/19	weekday	no	6/28/19
Total Estimated Volume (cy)			18.9				
Manitou Waste Shed – Waste							
MNT-W1	bagged/loose	waste	1.0	6/23/19 pm	mixed	yes	6/25/19
MNT-W2	bagged/loose	waste	0.1	6/24/19 am	mixed	yes	6/25/19
MNT-W3	bagged/loose	waste	0.2	6/24/19 pm	mixed	yes	6/25/19
MNT-W4	bagged/loose	waste	0.1	6/25/19 am	mixed	yes	6/25/19
MNT-W5	bagged/loose	waste	0.4	6/25/19 pm	mixed	yes	6/28/19
MNT-W6	bagged/loose	waste	0.1	6/26/19 pm	mixed	yes	6/28/19
MNT-W7	bagged/loose	waste	0.7	6/27/19 pm	mixed	yes	6/28/19
MNT-W8	bagged/loose	waste	0.2	6/28/19 am	mixed	yes	6/28/19
Total Estimated Volume (cy)			2.8				
Manitou Waste Shed - Recycling							
MNT-R1	bagged/loose	recycling	0.2	6/23/19 pm	mixed	no	6/25/19
MNT-R2	bagged/loose	recycling	0.4	6/24/19 pm	mixed	no	6/25/19
MNT-R3	bagged/loose	recycling	0.1	6/25/19 pm	mixed	no	6/28/19
MNT-R4	bagged/loose	recycling	0.1	6/26/19 am	mixed	no	6/28/19
MNT-R5	bagged/loose	recycling	0.1	6/26/19 pm	mixed	no	6/28/19
MNT-R6	bagged/loose	recycling	0.1	6/28/19 am	mixed	no	6/28/19
Total Estimated Volume (cy)			1.0				

* The Telluride Bluegrass Festival concluded on the evening of June 23, 2019. June 24th was considered a “move out day,” and waste collected on June 24th is expected to have the characteristics of “weekend” waste.

Table B2. Summary of Total Weight Analysis

Event Day	Event Date	Waste		Recycling		Total Material	
		Container(s)	Weight	Container(s)	Weight	Weight	% Separated Recyclables
Franz Klammer Lodge							
Day 1	6/23/19	FKL-W2	351.8	FKL-R1	181.9	533.7	
Day 2	6/24/19	FKL-W1, FKL-W2	245.3	FKL-R2	255.5	500.8	
Day 3	6/25/19	FKL-W3	382.3	---	---	382.3	
Day 4	6/26/19	FKL-W4	326.2	---	---	326.2	
		FKL-W5	215.3	---	---	215.3	
Day 5A	6/27/19	FKL-W6	233.8	FKL-R3	122.3	356.1	
		FKL-W7	283.9	FKL-R4	94.6	378.5	
		---	---	FKL-R5	84.1	84.1	
Day 6	6/28/19	FKL-W8	167.5	FKL-R6	160.0	327.5	
Totals			2,206.1		898.4	3,104.5	28.9%
Manitou Shed							
Day 3	6/25/19	MNT-W1, MNT-W2, MNT-W3, MNT-W4	241.6	MNT-R1, MNT-R2	38.6	280.2	
Day 6	6/28/19	MNT-W5, MNT-W6, MNT-W7, MNT-W8	179.2	MNT-R3, MNT-R4, MNT-R5, MNT-R6	22.5	201.7	
Totals			420.8	---	61.1	481.9	12.7%

Table B3. Summary of Waste Composition Analysis

Waste Component*	Weight Proportion (Mass Fraction)	
	Franz Klammer Lodge	Manitou Waste Shed
Glass containers	7.0%	13.8%
Other glass	1.7%	1.1%
Ferrous metal	0.9%	0.6%
Aluminum	1.1%	1.5%
Other metal	0.3%	0.1%
Plastic 1 & 2	2.4%	1.7%
Plastic film	3.4%	2.5%
Other plastic	5.3%	3.4%
Recyclable paper	3.7%	3.2%
Cardboard and boxboard	4.6%	2.7%
Other paper, compostable	6.7%	5.8%
Plastic-coated paper	3.2%	2.6%
Other paper	0.2%	0.0%
Recoverable food	2.3%	1.7%
Compostable food waste	31.9%	27.4%
Other compostable organic waste	4.8%	0.4%
Wood	7.7%	6.9%
Textiles	1.4%	2.4%
Electronics	0.9%	0.5%
Special/hazardous waste	8.6%	21.1%
Other waste	2.0%	0.7%
Residuals	0.0%	0.0%

* Please refer to the Characterization Protocol and Data Collection Plan for component category definitions.