

# GUNNISON COUNTY ENERGY ACTION PLAN ADVISORY GROUP

## MISSION STATEMENT

We, the residents of Gunnison County, will reduce our use of non-renewable energy and our contributions to global climate change in order to improve our lives, strengthen our economy, and make our community more self-sustaining. We believe that our actions will benefit future generations of county residents and the wellbeing of humankind.

## GUIDING PRINCIPLES<sup>1</sup>

The following principles have guided the advisory group's recommendations:

1. We will propose actions that yield energy efficiency, preserve the environment, and conserve natural resources.
2. To the maximum extent possible, we will recommend voluntary programs, encouraging participation through reduced costs, incentives, or both.
3. Policy objectives from the Energy Action Planning committee are recommendations only. Responsibility for policy-making and implementation lies with the governments of the County, municipalities, and state and federal entities.
4. This work is based on the best available data; we invite public scrutiny of our work and welcome additional or alternative data and estimates from the public as well as commercial and governmental entities.
5. We will recommend actions based on the criteria of CO<sub>2E</sub> reduction, affordability (including return on investment and time to achieve positive returns), ease of implementation, and community acceptance.
6. We will recommend actions that can be afforded by most residents, businesses, and the County, and which provide a positive rate of return within a reasonable time.
7. Emissions from new development in the unincorporated parts of the County will still fall within the overall GHG reduction targets established by this plan.
8. We will recommend actions that tend to increase reliance on local resources, both human and natural, in order to decrease our dependence on goods and services from outside the Valley
9. We will coordinate our recommendations with those of the municipalities and other entities to address issues, such as transportation, that are regional in scale.
10. This is a preliminary plan that must be updated frequently as science, technology, economics, and politics alter our circumstances. The plan will also be updated based on the measured efficacy of implemented programs[The plan will reflect the consensus of the scientific community. future plan will need to be developed for time beyond 2020]
11. We will seize opportunities to work with local agencies/businesspeople/citizens that may be able to provide low/no-cost educational opportunities that may increase the public's ability to implement steps in their own lives that will help meet the goals presented in this report.

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<sup>1</sup> The County GHG group has benefited from reviewing drafts of the Gunnison GHG group - many of the principles articulated here originated with them.

# RESIDENTIAL BUILDINGS

Prompt County Action	Status	Action	Dwelling Units/Yr 2010 - 2019	Number / Dwelling Unit	Cost per Install.	Total Installed/ Completed as of 1/1/2020	Cumul Tons CO <sub>2e</sub> Saved	Cumul (Cost) / Savings	Cumul (Cost) / Savings per Ton CO <sub>2e</sub>	Annual Tons CO <sub>2e</sub> Saved	Annual (Cost) / Savings	Annual (Cost) / Savings per Ton CO <sub>2e</sub>	Initial County Role	Implementers	Funding Sources	Co-Benefits	Tools for Measuring Success	
		<b>1.1 Heating - Existing Buildings</b>																
★		1.1.a <b>Energy Audits (blower door, infrared scan):</b> each building receives an energy audit by a certified professional who provides a written report on the bldg's status + a list of recommended actions	150	1	200	1,500		(\$300,000)					Obtain funding via GEO: » EEBC program » Federal weatherization grants » Additional state & federal funds as they become known/available	Local, certified, private contractors	GCEA rebate programs, Governor's Energy Office grant programs, Federal economic stimulus program grants		Number of homes audited (gather data from contractors)	
★		1.1.b <b>Weatherization Retrofits:</b> air infiltration controlled and insulation installed in crawl spaces, attics & roofs & doors, windows & coverings upgraded	150	1	6000	1,500	76,725	\$5,190,000	\$68	13,950	\$2,580,000	\$185		Local, certified, private contractors (possibly through local "Green Building Guild"; non-local contractors	» GCEA rebate programs » Low-cost loans via locally-issued bonds (see Boulder County and Berkeley, CA programs) » State and Federal stimulus grants » Local revolving fund based on voter-approved energy investment fee	» Number of homes retrofitted » Post-retrofit audit data (how much energy actually saved) » Positive ROI for funders » Positive ROI for participants		
		1.1.c <b>Retrofits: biomass heating</b>	12	1	\$2,250	120	2,772	\$73,200	\$26	504	\$56,400	\$112		Local, certified, private contractors (possibly through local "Green Building Guild"; non-local contractors	» GCEA rebate programs » Low-cost loans via locally-issued bonds » State and Federal stimulus grants » Local revolving fund based on voter-approved energy investment fee	» Number of homes retrofitted » Post-retrofit audit data (how much energy actually saved) » Positive ROI for funders » Positive ROI for participants		
		1.1.d <b>Retrofits: ground source heat pumps</b>																
		<b>1.2 New construction</b>																
★		1.2.a <b>Building codes:</b> adopt & implement a commonly-shared version IBC 2009 building codes w/adaptations as needed for Gunnison County											» Assign County staff & Planning Commission to begin process of adapting IBC 2009 building code and incorporating into LUR	» County Planning Dept, County Planning Commission, County Board of Commissioners » Municipal Planning Depts, Planning Commissions, City/Town Councils	N/A		» All new residential buildings constructed in Gunnison County after Jan. 1, 2011, conform with the commonly adopted building code, as amended for the county's particular environment and conditions » Cost of new homes attributable to upgraded building code does not exceed an agreed-upon percentage	
		1.2.b <b>Incentives:</b> discourage use of wasteful outdoor heating (hot tubs, heated eaves & driveways, et al) via building codes, ascending block rate energy pricing, et al												» County Planning Dept, County Planning Commission, County Board of Commissioners » Municipal Planning Depts, Planning Commissions, City/Town Councils » GCEA	N/A		» Surveys: number of outdoor heat-consuming devices in use	
		1.2.c <b>Recycle: recycle</b> surplus building materials from construction sites												» Green Builders Guild » Gunnison County Homebuilders Assn » Gunnison County Freecycle » Private recyclers » Private, non-profit coordinator (ORE?, GBG?) - for website	» Building permit fees » Private investment » Energy investment fees	» Surveys: amount of recycled material bought/sold + cost savings		

**RESIDENTIAL BUILDINGS**

Prompt County Action	Status	Action	Dwelling Units/Yr 2010 - 2019	Number / Dwelling Unit	Cost per Install.	Total Installed/ Completed as of 1/1/2020	Cumul Tons CO <sub>2e</sub> Saved	Cumul (Cost) / Savings	Cumul (Cost) / Savings per Ton CO <sub>2e</sub>	Annual Tons CO <sub>2e</sub> Saved	Annual (Cost) / Savings	Annual (Cost) / Savings per Ton CO <sub>2e</sub>	Initial County Role	Implementers	Funding Sources	Co-Benefits	Tools for Measuring Success	
		<b>1.3 Water</b>																
		1.3.a Reduce water consumption: low-flow shower heads & faucets												» Homeowners, apartment landlords, renters	» Home owners, landlords, renters			» Surveys: number of low-flow shower heads in each dwelling
		1.3.a.1 Incentives for existing bldgs												» GCEA, Atmos, City of Gunnison (rebates)	» Energy suppliers			
		1.1.c.2 Building codes for new construction												» City/Town/County Planning Commissions, City/Town				
		<b>Water heating</b>																
		1.3.b.1 Replace existing H2O heaters w/E-Star heaters or on-demand heaters by providing incentives												» Homeowners, contractors (installation)	» Homeowners, landlords, renters			» Number of blankets sold (survey local hardware sellers - not very accurate since blankets can also be bought at big-box home improvement)
		1.3.b.2 Install solar H2O heaters: provide incentives	150	1	\$4,200	1,500	9,735	(\$4,287,000)	(\$440)	1,770	\$66,000	\$37		» Licensed, certified solar H2O installers (installation) » GCEA, Atmos, City of Gunnison, State & Federal grants (rebates) » Municipalities, County, Energy Authority (financing)	» GCEA, Atmos, GCEA, State & Federal govts (rebates)		» Number of installed solar systems » Annual heating capacity of installed systems » Surveys: household energy and cost savings	
		1.3.b.3 Increase efficient use of H <sub>2</sub> O heaters: incentives for installation of heater blankets and timers												» Homeowners, contractors (installation)	» Homeowners, landlords, renters			» Number of blankets sold (survey local hardware sellers - not very accurate since blankets can also be bought at big-box home improvement stores)
		<b>1.4 Lighting</b>																
		1.4.1 Install CFL lamps: give-aways, rebates, low-cost purchasing	150	5	\$2	7,500	3,005	\$351,391	\$117	546	\$63,617	\$116		» Homeowners, landlords, renters (installation)	» Homeowners, landlords, renters		» Survey: number of CFLs installed per home, per capita	
		1.4.2 Install LED lamps: samples, rebates, low-cost purchase program												» Hardware, electrical, and big-box retail stores (discounts)	» GCEA, City of Gunnison, State & Federal govts		» Calculated energy and GHG savings from survey data	
		1.4.3 Motion sensors: rebates, low-cost	25	2	\$20	500	445	\$44,280	\$99	81	\$9,369	\$116						
		<b>1.5 Electricity/Appliances &amp; Computers</b>																
		1.5.1 ENERGY STAR Computers (replacement of existing)	150	1	\$0	1,500	2,270	\$276,829	\$122	413	\$50,333	\$122	N/A	» Residents (computers, monitors, printers, power strips)	» Residents (computers, monitors, printers, power strips)		» Energy inventory	
		1.5.2 ENERGY STAR Monitors (replacement of existing monitors)	150	1	\$0	1,500	935	\$113,988	\$122	170	\$20,725	\$122		» Residents, landlords (appliances)	» Residents, landlords (appliances)		» Customer survey: number of devices installed, cost savings /household	
		1.5.3 ENERGY STAR Printers (replacement of existing printers)	150	1	\$0	1,500	935	\$113,988	\$122	170	\$20,725	\$122		» GCEA, Atmos, City of Gunnison, State & Federal govts (rebates)	» GCEA, Atmos, City of Gunnison, State & Federal govts (rebates)			
		1.5.4 ENERGY STAR Refrigerators	150	1	\$90	1,500	572	(\$65,211)	(\$114)	104	(\$14,311)	(\$138)		» Gunnison County Energy Authority, State & Federal govts (financing)	» Gunnison County Energy Authority, State & Federal govts (financing)			
		1.5.5 ENERGY STAR Dishwashers	150	1	\$0	1,500	588	\$71,650	\$122	107	\$13,027	\$122						
		1.5.6 ENERGY STAR Clothes Dryers	150	1	NA	1,500	NA	NA	NA	NA	NA	NA						
		1.5.7 Clothes Dryers » Air Drying	150	1	\$75	1,500	3,434	\$306,233	\$89	624	\$53,633							
		1.5.8 ENERGY STAR Clothes Washers	150	1	\$40	1,500	107	(\$46,973)	(\$440)	19	(\$9,631)	(\$496)						
		1.5.9 Power Strips	150	2	\$10	3,000	5,342	\$621,362	\$116	971	\$116,930	\$120						

# RESIDENTIAL BUILDINGS

Prompt County Action	Status	Action	Dwelling Units/Yr 2010 - 2019	Number / Dwelling Unit	Cost per Install.	Total Installed/ Completed as of 1/1/2020	Cumul Tons CO <sub>2e</sub> Saved	Cumul (Cost) / Savings	Cumul (Cost) / Savings per Ton CO <sub>2e</sub>	Annual Tons CO <sub>2e</sub> Saved	Annual (Cost) / Savings	Annual (Cost) / Savings per Ton CO <sub>2e</sub>	Initial County Role	Implementers	Funding Sources	Co-Benefits	Tools for Measuring Success	
		<b>1.6 Energy production</b>																
		1.6.1 Biomass conversion: propane or electricity to wood pellet heating											Request Planning Commission to research means of encouraging use of biomass for heating homes, producing electricity (LUR amendments)	» Private investors » Municipalities & County - Tax incentives - Expedited permitting - Support from Municipalities & County in applications to State & Federal agencies » State & Federal agencies w/responsibility for public land/biomass resources	» Private investors (individuals, partnerships, energy companies, banks) » Gunnison County Energy Authority » Municipalities & County » State & Federal agencies w/responsibility for public land/biomass resources, permitting, licensing			
		1.6.2 Geothermal: electricity production											Adopt resolution supporting development of geothermal power in the county	» Private investors » Municipalities & County - Tax incentives - Expedited permitting - Support from Municipalities & County in applications to State & Federal agencies » State & Federal agencies w/responsibility for public land/biomass resources	» Private investors (individuals, partnerships, energy companies, banks) » Gunnison County Energy Authority » Municipalities & County » State & Federal agencies w/responsibility for public land/biomass resources, permitting, licensing			
		1.6.3 Solar: residential photovoltaics: incentives for photovoltaics												» Private investors » Municipalities & County - Tax incentives - Expedited permitting - Support from Municipalities & County in applications to State & Federal agencies » State & Federal agencies w/responsibility for public land/biomass resources	» Private investors (individuals, partnerships, energy companies, banks) » Gunnison County Energy Authority » Municipalities & County » State & Federal agencies w/responsibility for public land/biomass resources, permitting, licensing			
							134,485	\$2,463,738	\$18	19,440	\$3,026,816	\$156						

**Calculation Notes**

- A. Inputs**  
**Dwelling Units/Year:** Assumed number of residential dwelling units that will participate in this action step each year from 2010 through 2019.  
**Number/Dwelling Unit:** Assumed number of actions/installations per dwelling unit (e.g., weatherizing an entire house is 1 action/dwelling unit; installing 5 CFLs per house is 5 installations/dwelling unit)  
**Cost per Install:** The projected cost of each action/installation (e.g., average cost of weatherizing an entire house is assumed to be \$6,000; average cost of each CFL installed is assumed to be \$2)
- B. Results (detailed calculations underlying these projected results are available in spreadsheet format upon request)**  
**Metric Tons CO<sub>2e</sub> Saved:** Amount of CO<sub>2e</sub> not released into the atmosphere, based on the inputs  
**(Cost)/Savings:** Savings minus Costs - note that a positive number means that savings exceed costs; a negative number means costs exceed savings  
**(Cost)/Savings per Ton CO<sub>2e</sub>:** (Cost)/Savings divided by Metric Tons CO<sub>2e</sub> Saved - a positive number means savings exceed costs; a negative number means costs exceed savings  
**Cumul:** Cumulative amount for the period 2010-2019 (recognizes that actions/installs in 2010 accumulate for 10 years, those in 2011 for 9 years, and so on)  
**Annual:** Annual amount due to the actions taken during the prior ten years for each ensuing year beginning in 2020 (assumes constant 2009 dollars; i.e., no inflation)

**COMMERCIAL BUILDINGS**

Prompt County Action	Status	Action	Units/Yr 2010 thru 2019	Number per Unit	Cost per Install.	Total Completed /Installed as of 1/1/2020	Cumul. Tons CO2e Saved	Cumul. (Cost) / Savings	Cumul. (Cost) / Savings per Ton CO2E	Annual Tons CO2e Saved	Annual (Cost) / Savings	Annual (Cost) / Savings per Ton CO2E	Initial County Role	Implementers	Funding Sources	Co-Benefits	Tools for Measuring Success	
		<b>2.1 Heating - Existing Buildings</b>																
★		2.1.a <b>Energy Audits (blower door, infrared scan):</b> each building receives an energy audit by a certified professional who provides a written report on the bldg's status + a list of recommended actions	12	1	900	120	N/A	N/A	N/A	N/A	N/A	N/A	Obtain funding via GEO: » EEBG program » Federal weatherization grants » Additional state & federal funds as they become known/available	Local, certified, private contractors	» GCEA rebate programs » Low-cost loans via locally-issued bonds (see Boulder County and Berkeley, CA programs) » State and Federal stimulus grants		Number of businesses audited (gather data from contractors)	
★		2.1.b <b>Weatherization Retrofits:</b> air infiltration controlled and insulation installed in crawl spaces, attics & roofs & doors, windows & coverings upgraded	12	1	\$7,500	120	5,434	(\$3,719,430)	(\$684)	988	\$223,740	\$226		* Business owners * Local, certified, private contractors (possibly through local "Green Building Guild"; non-local contractors	» Local revolving fund based on voter-approved energy investment fee		» Number of businesses retrofitted » Post-retrofit audit data (how much energy actually saved) » Positive ROI for funders » Positive ROI for participants	
		2.1.c <b>Retrofits: high-efficiency heaters &amp; boilers</b>												* Business owners & landlords * Local, certified plumbers & HVAC contractors				
		2.1.d <b>Retrofits: biomass heating</b>																
		2.1.e <b>Retrofits: ground source heat</b>																
		2.1.f <b>HVAC Maintenance: air filters &amp; boiler systems</b>											Letter to Chambers of Commerce, highlighting cost benefits of regular HVAC maintenance		Business owners			
		<b>2.2 New construction</b>																
★		1.2.a <b>Building codes:</b> adopt & implement a commonly-shared version IBC 2009 building codes w/adaptations as needed for Gunnison County											» Assign County staff & Planning Commission to begin process of adapting IBC 2009 building code and incorporating into LUR	» County Planning Dept, County Planning Commission, County Board of Commissioners » Municipal Planning Depts, Planning Commissions, City/Town Councils	N/A		» All new residential buildings constructed in Gunnison County after Jan. 1, 2011, conform with the commonly adopted building code, as amended for the county's particular environment and conditions » Cost of new homes attributable to upgraded building code does not exceed an agreed-upon percentage	
		1.2.b <b>Building codes:</b> require LEED certification											Request Planning Commission and Planning Dept to research feasibility and cost of requiring LEED certification on all new commercial buildings from 2012 onward	* Planning Commission * Planning Dept * Green Builders Guild (training) * County Home Builders Assn (training) * WSC Extended Studies	N/A		* All new commercial buildings constructed after 1/1/12 are LEED-certified * Comparison of utilities cost/sq ft between building constructed in 2011 and 2012	
		1.2.c <b>Incentives:</b> discourage use of wasteful outdoor heating (heated sidewalks, heated outside dining & shopping, et al)											Request Planning Commission to study feasibility of LUR amendments regulating use of wasteful outside heating.	* Planning Commission * Planning Dept * BOCC	N/A		* County- or ORE-conducted walking survey of business districts in unincorporated parts of the county	
		1.2.d <b>Recycle:</b> recycle surplus building materials from construction sites											Letters to County Homebuilders Assn, Green Builders Guild	* ORE * Green Builders Guild * Homebuilders Assn	N/A		* Survey of contractors	

**COMMERCIAL BUILDINGS**

Prompt County Action	Status	Action	Units/Yr 2010 thru 2019	Number per Unit	Cost per Install.	Total Completed /Installed as of 1/1/2020	Cumul. Tons CO2e Saved	Cumul. (Cost) / Savings	Cumul. (Cost) / Savings per Ton CO2E	Annual Tons CO2e Saved	Annual (Cost) / Savings	Annual (Cost) / Savings per Ton CO2E	Initial County Role	Implementers	Funding Sources	Co-Benefits	Tools for Measuring Success	
		<b>2.3 Water</b>																
		2.3.a Reduce water consumption: low-flow shower heads & faucets											Lead by example: implement all of these steps in County buildings & facilities	* Business owners * Local, certified plumbing contractors	* Business owners		* Survey of business owners, comparing water use & energy costs between businesses with and without implementation of water-saving.	
		2.3.a.1 Incentives for existing bldgs																
		2.3.a.2 Building codes for new construction																
		2.3.b Reduce heating of water																
		2.3.b.1 Replace existing H2O heaters w/E-Star heaters or																
		2.3.b.2 Install solar H2O heaters: provide incentives																
		2.3.c Water treatment: high efficiency treatment plant at CB South											Letter to CB South HOA encouraging an energy audit of facility					
		<b>2.4 Lighting</b>																
		2.4.1 Install CFL lamps: give-aways, rebates, low-cost purchasing											Lead by example: retrofit & install in all county buildings	* Business owners * Local electrical contractors (strip fluorescents) * GCEA (rebates) * Performance contractors	* Business owners * GCEA (rebates) * County or Energy Authority (low-cost, bond-funded, energy retrofit loans)		* Walking survey of commercial buildings * Survey of business owners, comparing retrofitted and non-retrofitted buildings	
		2.4.2 Install LED lamps: samples, rebates, low-cost purchase program																
		2.4.3 Retrofits: strip fluorescent lighting																
		2.4.4 Motion sensors: rebates, low-cost purchase program																
		<b>2.5 Electricity/Appliances &amp; Computers</b>																
		2.5.1 ENERGY STAR Computers											County letter to Chambers of Commerce, encouraging educational campaigns to business owners	* Business owners * GCEA (rebates)	* Business owners * GCEA (rebates)		* Survey of businesses focusing on items replaced, capital cost of replacement, energy savings	
		2.5.2 ENERGY STAR Monitors																
		2.5.3 ENERGY STAR Printers																
		2.5.4 ENERGY STAR Refrigerators																
		2.5.5 ENERGY STAR Dishwashers																
		2.5.6 ENERGY STAR Dryers																

**TRANSPORTATION**

Prompt County Action	Status	Action	Additional Users/Yr	Miles/Day per Pass	Days/Year	Total Additional Users as of 1/1/2020	Cumul. Tons CO <sub>2e</sub> Saved	Cumul (Cost) / Savings	Cumul (Cost) / Savings per Ton CO <sub>2e</sub>	Annual Tons CO <sub>2e</sub> Saved	Annual (Cost) / Savings	Annual (Cost) / Savings per Ton CO <sub>2e</sub>	Initial County Role	Implementers	Funding Sources	Co-Benefits	Tools for Measuring Success
		3.1 Education: educate citizens on options for utilizing local, low-carbon transportation		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	* BOCC letter to School District supporting inclusion in curriculum * BOCC letter to RTA, GCEA recommending expanded education campaign	» RTA » Tourism Authority » Schools » Local media (newspapers, radio stations) » Chambers of Commerce » Service organizations » Businesses » Gunnison County Energy Authority	» Budgeted allocations from each responsible entity		» Ridership » Hwy 135 and Hwy 50 traffic counts » Load factors » Surveys of public attitude/awareness
		<b>3.2 Public Transit</b>															
		<b>3.2.1 Increase Hwy 135 bus ridership</b>	100	60	240	1000	28,773	\$12,820,320	\$446	5,232	\$2,358,240	\$451					
		3.2.1.a More frequent/convenient bus stops											» Municipalities (City/Town Councils, Public Works) - siting construction/contracting » County BOCC & Public Works - siting, construction/contracting » RTA - siting, operation » CDOT - siting, permitting	» Municipalities - traffic studies siting, construction/contracting » County - traffic studies, siting construction/contracting » RTA - siting, construction/contracting » Federal & State grants		» Ridership » Load factors » Usage of each stop » Geographic area served » Radius of service area for each stop	
		3.2.1.b Circulator buses											» Municipalities » Homeowners Assns (CB South)	» State and Federal grants » Budget allocations » User fares » Advertising revenues		» Ridership - circulators & trunk lines » Load factors » Wait time at transfer points » Public satisfaction survey » Geographic area served	
		3.2.1.c More convenient and safe accommodations for skis and bikes on buses											» Municipalities » Homeowners Assns (CB South)	» RTA » State and Federal grants » Budget allocations » User fares » Advertising revenues		» Bus bike-carrying capacity - per bus, total » Bike rider/bus user ridership count » Customer satisfaction survey	
		3.2.1.d "Park & Bike" lots * Co-located w/Park & Ride * Stand-alone											Ensure that Park & Ride design specs in unincorporated areas include facilities for bike parking » Municipalities » Homeowners Assns (CB South)	» Municipalities » State and Federal grants » Budget allocations » User fares » Advertising revenues		» Geographic area served (population, radius, average travel time to lot) » Parking counts	
		3.2.1e Hub and spoke system to popular recreation spots from RTA bus stops											BOCC letter to RTA expressing interest/support for studying this proposal » County (BOCC, Public Works) » Municipalities & Homeowners Assns » RTA, Mountain Express » Private companies & outfitters » Natural resource mgt agencies (Forest Service, Park Service, BLM, et al)	» User fares » County (BOCC, Public Works) » Municipalities & Homeowners Assns » RTA, Mountain Express » Private companies & outfitters » Natural resource mgt agencies (Forest Service, Park Service, BLM, et al) » State & Federal grants		» Ridership » Hub & spoke bus load factors » Customer survey data	
		3.2.1.f Increase frequency of RTA & circulator buses											» RTA » Mountain Express » Municipalities & Homeowners Assns	» Homeowners Assns » State and Federal grants » Budget allocations » User fares » Advertising revenues		» Ridership » Bus load factors » Customer surveys	
		3.2.1.g Transit & pedestrian-oriented development regulations											BOCC request Planning Commission to study, and if feasible, propose amendment(s) to LUR » Municipalities (Planning Commissions, City/Town Councils) » County (Planning Commission, BOCC)	N/A		» Ridership » Traffic counts: Hwys & County Rds » Customer surveys	

# TRANSPORTATION

Prompt County Action	Status	Action	Additional Users/Yr	Miles/Day per Pass	Days/Year	Total Additional Users as of 1/1/2020	Cumul. Tons CO <sub>2</sub> e Saved	Cumul (Cost) / Savings	Cumul (Cost) / Savings per Ton CO <sub>2</sub> e	Annual Tons CO <sub>2</sub> e Saved	Annual (Cost) / Savings	Annual (Cost) / Savings per Ton CO <sub>2</sub> e	Initial County Role	Implementers	Funding Sources	Co-Benefits	Tools for Measuring Success
		3.2.1.h Study free vs modest-cost bus fares (e.g., free "stopping bus" & modest-cost "express bus")											BOCC letter to RTA expressing interest/support for studying this proposal	» Transportation consulting firm » RTA » Mountain Express » Municipalities & Homeowners Assns » County	» State and federal grants » RTA » Mountain Express » Municipalities & Homeowners Assns » County		» Study completed » Decision taken
		<b>3.2.3 Parking restrictions &amp; incentives</b>															
		3.2.2.a Parking time limits (perhaps w/decals for residents) on town streets in C.B. and Mt. C.B.												» Municipalities	» Fines » Municipalities		» Bus ridership » Survey: transportation habits
		3.2.2.b Parking "cash-out" incentive at workplaces												» Employers	» Employers		» Bus ridership » Survey: transportation habits
		<b>3.3 Fuel Efficiency</b>															
		<b>3.3.1 Vehicles</b>															
		3.3.1.a Promote use of hybrid, plug-in, and fuel-efficient vehicles: vehicle registration & license fee incentives	25	60	300	250	11,001	\$849,750	\$77	2,000	\$154,500	\$77		» State (license & registration fees)	» State gas taxes, oil & gas extraction fees » Voter-approved local rebate program supported by local energy investment fee		» Number of vehicles registered in county » Calculated fuel and GHG reductions
		3.3.1.b Promote carpooling: provide incentives & services (web-based ride board) to riders, drivers, employers	25	60	240	250	8,801	\$1,019,700	\$116	1,600	\$185,400	\$116		» RTA » ORE	» State & federal grants » County energy investment fee		» Number of individuals switching to carpools
★		3.3.1.c "Right-size" the number & size of government vehicles				0							Already included in current strategic plan	» Gunnison County (BOCC, County Manager)	» Gunnison County		» Annual fuel consumption » Calculated reduction in GHG emissions
		3.3.1.d Increase use of bikes: additional bike lanes (incl bike-to-school lanes), better intersections, community bikes	25	5	240	250	733	\$169,950	\$232	133	\$30,900	\$232	BOCC direct staff to study feasibility of bike lanes (Lower Castle Mtn, Ohio Crk, Skyland, et al)	» Municipalities » County » CDOT » RE1J school district (bike racks, safety classes, advocacy)	» State and federal grants » County energy investment fee » Municipalities & County		» Bicycle usage to/from schools
		3.3.1.e Permit use of electric vehicles on city streets	10	5	300	100	367	\$67,980	\$185	67	\$12,360	\$185		» Municipalities	N/A		» Number of electric vehicles registered in County
		3.3.1.f Increase pedestrian traffic: improved intersections, safer winter sidewalks	25	2	300	250	367	\$84,975	\$232	67	\$15,450	\$232		» Municipalities	» Municipalities		» Citizen surveys » Traffic counts within city/town limits
		<b>3.3.2 Emissions taxation</b>															
		3.3.2.a County tax on CO <sub>2</sub> emissions (mileage, fuel usage, or cap&trade) w/exemptions for agricultural diesel												» Citizen education groups (advocacy) » ORE » Voters (approve investment fee) » BOCC	» Fuel purchases (ag uses exempted)		» Annual county-wide mileage figures (from traffic counts)
		<b>3.4 Commercial Traffic</b>															
		3.4.1 Decrease commercial traffic on Hwy 135															
		3.4.1.a Commercial car/truck/load pooling program to combine and share transport and heavy equipment via a phone- and web-based "truck/trailer/equipment share board"												» Lumber yards » Equipment rental agencies » Green builders guild » County Homebuilders Assn	» Startup grant from County or State » County energy investment fee via Energy Authority		» Savings accrued to builders and suppliers (survey) » Heavy vehicle traffic count on county highways & roads
		<b>3.5 Airport</b>															
		3.5.1 County powers: explore legal limits of county's powers w/regard to:															
		3.5.1 County Energy Investment Assessment on emissions											BOCC direct County Attorney, Airport Director, Staff to study these measures	» County Attorney	» County		» Establishment of steady revenue streams for energy efficiency/GHG reduction programs to Energy Authority
		3.5.2 Carbon offset assessment on airport takeoffs															

**TRANSPORTATION**

Prompt County Action	Status	Action	Additional Users/Yr	Miles/Day per Pass	Days/Year	Total Additional Users as of 1/1/2020	Cumul. Tons CO2e Saved	Cumul (Cost) / Savings	Cumul (Cost) / Savings per Ton CO <sub>2e</sub>	Annual Tons CO2e Saved	Annual (Cost) / Savings	Annual (Cost) / Savings per Ton CO <sub>2e</sub>	Initial County Role	Implementers	Funding Sources	Co-Benefits	Tools for Measuring Success	
		3.5.3 Energy efficiency standards for aircraft and airport operations																

**WASTE**

Prompt County Action	Status	Action	Cumul Tons CO2e Saved	Cumul (Cost) / Savings	Cumul (Cost) / Savings per Ton CO <sub>2e</sub>	Annual Tons CO2e Saved	Annual (Cost) / Savings	Annual (Cost) / Savings per Ton CO <sub>2e</sub>	Initial County Role	Implementers	Funding Sources	Co-Benefits	Tools for Measuring Success
		<b>3.1 Methane Harvesting</b>											
		3.1.1 Gunnison County Landfill							* County staff (Planning, Legal) discuss feasibility, legal issues with owners, regulatory bodies				
		3.1.2 West Elk Mine											
		3.1.3 North Fork Valley (generate electricity for the mines)											
		3.1.4 Wastewater treatment plants											
		<b>3.2 Water Efficient Appliances &amp; Fixtures (see Residential, Commercial, Govt Buildings)</b>											
		<b>3.3 Reduction of emissions &amp; energy use due to household waste</b>											
		3.3.1 Curbside Recycling (paper, metals, plastics, glass)							Request staff to research and implement an expanded list of recyclable materials (e.g. #5 - #7 plastics)	* City of Gunnison * Private companies * County (expand list of acceptable recyclables)	* User fees * Sales to recycling aggregaters		Weight of recyclables collected
		3.3.2 Pay-As-You-Throw Program								* City of Gunnison * Private companies	* User fees * Sales to recycling aggregaters		Weight of recyclables collected
		3.3.3 Household goods "freecycling" service (see freecycle.org)								* ORE * Citizen groups	N/A		Informal surveys of participants
		3.3.4 Electronic Recycling (municipalities & county take over programs w/local drop-off points)								* Municipalities	* User fees * Sales to recycling aggregaters * Municipal budgets		Weight of recyclables collected
		3.3.5 CFL disposal program (ACE Hdwr does this now) & bulb eaters								* ORE & other citizen groups * Municipalities * County (recycling center)	* User fees * Grants & donations * Municipal & County budgets		Weight of recyclables collected
		3.3.6 Community, neighborhood, or individual composting & gardening											
		3.3.6.a Sell barrels at cost or assist with bulk ordering								* Hardware stores * State & County Extension * Private non-profit orgs	* Sales revenues		Surveys on amount, kind, and seasonal home- and community-food production
		3.3.6.b Grants for use of city ROW: community gardens, streetscape programs								* Municipalities * GEO (grants)	* Municipal budgets (personnel for monitoring/assistance) * Colorado GEO (grants)		
		<b>3.4 Biomass: burnable bricks made from waste products</b>							Request county staff to research regulatory issues	* Private investors	* Private investment		Weight of burnable bricks sold
		<b>3.5 Commercial &amp; Government Recycling</b>											
		3.5.1 Construction Waste Recycling							* Investigate building standards for use of recycled materials (Planning Dept) * If needed, request Planning Commission to add standards to county regulations	* Private contractors * Private aggregaters & sellers * ORE (organizing)	* Private investors		Survey of building contractors
		3.5.2 Steel Recycling program (not taken to landfill)								* Private companies	* Private investors		Survey of building contractors
		<b>3.6 Agricultural Waste</b>											
		3.6.1 Cap & Trade for green land sequestration of cattle-produced CO <sub>2e</sub> emissions							County staff, w/stockgrowers & extension service research whether this would be beneficial				

**WASTE**

Prompt County Action	Status	Action	Cumul Tons CO2e Saved	Cumul (Cost) / Savings	Cumul (Cost) / Savings per Ton CO <sub>2E</sub>	Annual Tons CO2e Saved	Annual (Cost) / Savings	Annual (Cost) / Savings per Ton CO <sub>2E</sub>	Initial County Role	Implementers	Funding Sources	Co-Benefits	Tools for Measuring Success
		<b>3.7 Paper Waste</b>											
		3.7.1 Public awareness								* Local community service organizations * Local media * RE1J & WSC * Utility providers (w/billing) * Local businesses (e.g. CBMR) * Chambers of Commerce * Municipalities & County Govt			County-wide surveys of public awareness, intention, acceptance, adoption
		3.7.2 Purchasing policy								* RE1J & WSC * Utility providers * Local businesses (e.g. CBMR) * Chambers of Commerce * Municipalities & County Govt			* Publication of purchase policies * Voluntary outside review of annual purchases
		3.7.3 Experiential learning/schools								* RE1J & WSC * Private K-12 schools			* Survey of schools' annual reports

# AGRICULTURE

Action	Cumul Tons CO <sub>2</sub> e Saved	Cumul (Cost) / Savings	Cumul (Cost) / Savings per Ton CO <sub>2</sub> E	Annual Tons CO <sub>2</sub> e Saved	Annual (Cost) / Savings	Annual (Cost) / Savings per Ton CO <sub>2</sub> E
<b>8.1 Irrigated Meadow production</b>						
8.1.1 Soil Type						
8.1.2 Management Practices						
8.1.3 Fertility Management						
<b>8.2 Rangeland Production</b>						
8.2.1 Soil Type						
8.2.2 Grazing Management Practices -						
8.2.3 Grazing Management Practices -						
<b>8.3 Forest Production</b>						
8.3.1 Soil Type						
8.3.2 Forest Management Practices -						
8.3.3 Forest Management Practices - Public						
<b>8.4 Soils</b>						
8.4.1 Soil Quality Inventory						
8.4.2 Soil Carbon Sequestration Rates						
<b>8.5 Conservation Easements</b>						
8.5.1 Current Acres in Conservation						
8.5.2 Incentives to Fund Conservation						
<b>8.6 Carbon Credits</b>						
8.6.1 Potential to market Carbon Credits						
<b>8.7 Potential Sources for Biomass</b>						
8.7.1 Public and Private Land Forestry						
8.7.2 Used Construction Products						
<b>8.8 Education</b>						
8.8.1 Carbon Cycle and Local Ecological						
8.8.2 Best Management Practices for						
8.8.3 Uses of Biomass for Energy						

**POLICY, FINANCE, AND EDUCATION**

Prompt County Action	Status	ACTION	Cumul. Tons CO <sub>2e</sub> Saved	Cumul (Cost) / Savings	Cumul (Cost) / Savings per Ton CO <sub>2e</sub>	Annual Tons CO <sub>2e</sub> Saved	Annual (Cost) / Savings	Annual (Cost) / Savings per Ton CO <sub>2e</sub>	Initial County Role	Implementers	Funding Sources	Co-Benefits	Tools for Measuring Success
		<b>7.1 Financing (including incentives/disincentives)</b>											
★		7.1.1 Low cost loans			N/A			N/A	Apply for ARRA funding through GEO for: * Direct grants (EECBG) * Underwriting for loan program * Weatherization grants	* Municipalities & County * Energy authority * Local banks (possibly in partnership w/municipalities & county)	* Economic stimulus programs (during startup phase) * Local banks (ongoing) * Bonds (see Boulder County & Berkeley, CA) * State revolving fund		* Number of homes & businesses weatherized * Energy usage data from utilities, energy suppliers * Number of new, locally-owned/operated energy/GHG-related businesses started and staying in business
★		7.1.2 Grants			N/A			N/A		* State and federal govts	* State & federal govts		
		7.1.3 Rebates			N/A			N/A		* GCEA * City of Gunnison (for Gunnison residents)	* Federal govt (economic stimulus programs) * Utility companies		
		7.1.4 Tax credits			N/A			N/A		* State and federal govts	N/A		
		7.1.5 Performance contracting			N/A			N/A		* ORE (references, expertise) * Energy authority (references, expertise)	* Home and business owners (customers)		
		7.1.6 Reduced application fees			N/A			N/A	Direct Planning Commission & Planning Dept staff to explore possibilities in fee structure	* Municipalities & county	N/A		
		7.1.7 Carbon tax - cap & trade or inclining block rate to finance retrofits (impact fee - look at Aspen & Boulder)			N/A			N/A	* Initiate public awareness campaign * Direct staff to research possible policies	* County via Energy Authority & voter approval	* User fees		
		7.1.8 Net metering			N/A			N/A		* GCEA * City of Gunnison (for Gunnison residents)	* Utility services fee structure		
		<b>7.2 Policy</b>											
		7.2.1 Higher building code standards			N/A			N/A					
		7.2.1.a Energy points system update (LUR)			N/A			N/A	Request Planning Commission & Planning Dept staff to investigate (in context of IBC 2009 adoption)				
		7.2.1.b Adopt 2009 IBC in county and all municipalities			N/A			N/A	* Collaborate via Mayors/Managers group to introduce topic in City & Town Councils * Discuss w/Homebuilders Assn, et al * Form county-wide group to study/recommend adaptation/adoption to Planning Commission	» County Planning Dept, County Planning Commission, County Board of Commissioners » Municipal Planning Depts, Planning Commissions, City/Town Councils	N/A		» All new residential buildings constructed in Gunnison County after Jan. 1, 2011, conform with the commonly adopted building code, as amended for the county's particular environment and conditions » Cost of new homes attributable to upgraded building code does not exceed an agreed-upon percentage

**POLICY, FINANCE, AND EDUCATION**

Prompt County Action	Status	ACTION	Cumul. Tons CO2e Saved	Cumul (Cost) / Savings	Cumul (Cost) / Savings per Ton CO2E	Annual Tons CO2e Saved	Annual (Cost) / Savings	Annual (Cost) / Savings per Ton CO2E	Initial County Role	Implementers	Funding Sources	Co-Benefits	Tools for Measuring Success
		7.2.1.c Mandatory air leakage specs in code (opt out for \$\$\$)			N/A			N/A	Request Planning Commission & Planning Dept staff to investigate (in context of IBC 2009 adoption)	* Municipalities & county	* New home owners, business owners in new buildings		* Number of new buildings constructed to leakage specs * Number of opt-outs
		<b>7.3 EDUCATION</b>											
		7.3.1 Public awareness/education campaign			N/A			N/A		* ORE * GCEA * City of Gunnison (public utilities dept) * RE1J			
		7.3.2 DIY classes for homeowners, business owners			N/A			N/A		* WSC Extended Studies * RE1J school district	» Participant fees » State and Federal Grants		* Number of participants * Follow-up surveys on utility
		7.3.3 Classes for builders, contractors, developers			N/A			N/A		» Gunnison County Green Builders Guild	» Participant fees » State and Federal Grants		» Number of local, certified raters, insulators, builders, et al
		7.3.4 Certification program for auditors, insulators, builders, et al			N/A			N/A		» Gunnison County Green Builders Guild	» Participant fees » State and Federal Grants		» Number of local, certified raters, insulators, builders, et al
		7.3.5 Maintain list of incentives			N/A			N/A		* ORE * Energy authority	* Part of entities' annual budget		* Usage rate (e.g. website hits)
		7.3.6 School assignments for kids/parents			N/A			N/A		* RE1J school district	* Part of entities' annual budget		* Publication of compilation of
		<b>7.4 COORDINATION/VALLEY-WIDE MANAGEMENT:</b> Establish an Energy Coordinator position for the county											
	★	7.4.1 Establish an Energy Coordinator position serving the entire county			N/A			N/A	* Propose topic for discussion at Mayors/Managers * Presentations to City and Town Councils * Apply for grant funding for initial implementation (county staff)	» Municipalities & County » County voters (if energy investment assessments involved)	» Budget allocations from Municipalities, County » State and Federal grants (overhead) » Energy investment fees (if authorized by voters)		» Energy usage inventory (document reductions) » Number of county residents benefitted & benefit/resident » Geographic allocation of funding » External grants and other funds obtained
		7.4.2 Establish a "Green Builders Guild" for county builders			N/A			N/A		» Local, interested builders and contractors	» Local, interested builders and contractors		» Membership » Members' business volume
		7.4.3 Establish a Gunnison County Energy Authority to administer programs, obtain and administer financing			N/A			N/A	* Monitor climate for establishment via surveys & polls	» Municipalities & County » County voters (if energy investment assessments involved)	» Budget allocations from Municipalities, County » State and Federal grants (overhead) » Energy investment fees (if authorized by voters)		» Energy usage inventory (document reductions) » Number of county residents benefitted & benefit/resident » Geographic allocation of funding » External grants and other funds obtained

## GUNNISON COUNTY ENERGY ACTION PLAN ADVISORY GROUP

Source of CO <sub>2</sub>	2005 Emissions CO <sub>2E</sub> (Tons)	20% Reduction Target (Tons)
<b>Residential Buildings<sup>2</sup></b>		
- Electricity	43,000	
- Non-renewable Fossil Fuels	18,000	
<b>Total for Residential Buildings</b>	<b>62,000</b>	<b>12,000</b>
<b>Commercial Buildings</b>		
- Electricity	26,000	
- Non-renewable Fossil Fuels	5,000	
<b>Total for Commercial Buildings</b>	<b>31,000</b>	<b>6,200</b>
<b>Total for all Buildings</b>	<b>93,000</b>	<b>19,000</b>
<b>Transportation<sup>3</sup></b>		
- Gasoline	160,000	
- Diesel	15,000	
<b>Total for Transportation</b>	<b>180,000</b>	<b>35,000</b>
<b>Waste (Landfill)</b>		
- Paper Products	14,000	
- Food Waste	2,300	
- Plant Debris	1,900	
- Wood, Textiles, Other Fiber	1,700	
<b>Total Landfill Emissions</b>	<b>20,000</b>	<b>4,000</b>
<b>Agricultural and Other</b>		
- Methane <sup>4</sup>	20,000	
- Nitrogen Oxides (fertilizers)	88	
<b>Total for Ag and Other</b>	<b>20,000</b>	<b>3,900</b>
<b>Total for UGRW in Unincorporated Areas</b>	<b>310,000</b>	<b>61,000</b>

\* Emissions figures rounded to 2 significant figures (e.g. 40,971 would be rounded to 41,000)

Source	2005 Emissions CO <sub>2E</sub> (Tons)	20% Reduction Target (Tons)
<b>Buildings &amp; Facilities (w/out Airport)</b>	<b>2,631</b>	<b>526</b>
<b>C.B.-Gunnison Regional Airport</b>	<b>1,822</b>	<b>364</b>
<b>Operations (water, sewer, streetlights)</b>	<b>189</b>	<b>38</b>
<b>Subtotal: Facilities, Buildings, Operations</b>	<b>4,642</b>	<b>928</b>
<b>Government Transportation</b>	<b>957</b>	<b>191</b>
<b>Waste (A=airport; B=buildings)</b>		
Paper products (A=86, B=174)	260	52
Food waste (A=48, B=95)	143	29
Plant debris (B = 12)	12	2
Wood, textiles (B=7)	7	1
	<b>422</b>	<b>84</b>
<b>Totals</b>	<b>6,021</b>	<b>1,204</b>