COLORADO
Energy Office

2018/2019 [FY2019] ANNUAL REPORT

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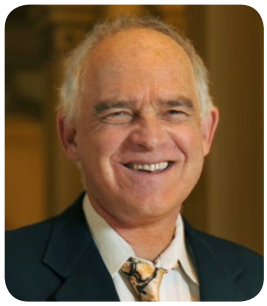
1 Letter from the Executive Director



The energy landscape is changing rapidly as technical and business innovation continue to push down the costs of wind and solar generation, battery technology improvements enable energy storage and affordable electric vehicles, and the impacts of climate change have created an imperative to promptly transition toward a low carbon energy system. Colorado has helped lead this transition, a leadership role that accelerated with the election of Governor Jared Polis in November 2018 on a platform that included an aspirational goal of 100% renewable electricity generation by 2040 and bold action on climate.

It cannot be overstated how important the advent of low-cost wind and solar energy is to enabling these changes. In September 2018, the Colorado Public Utilities Commission (PUC) approved a plan by Xcel Energy to replace two old coal-fired power plants in Pueblo with a combination of new wind, solar and battery storage as well as some existing natural gas generation. Not only will this reduce greenhouse gas (GHG) emissions by 4 million tons per year, it will also save ratepayers over $200 million in the coming years, as it is now cheaper to build new wind and solar generation than it is to operate most existing coal power plants. In October 2018, the PUC approved an agreement between Xcel Energy and EVRAZ Steel Mill in Pueblo to install the nation's largest customer-sited solar facility, which will provide low-cost, clean electricity and keep good paying union jobs in the area for decades to come.

Holy Cross Energy, a utility serving multiple counties in the mountains and on the western slope, adopted a goal of 70% renewables by 2030 but is now planning to achieve this objective 10 years early—without increased cost to its customers—due to the availability of low-cost wind. In December 2018, Xcel Energy announced a goal of delivering 100% carbon-free electricity by 2050 and Platte River Power Authority, which serves municipal utilities in Estes Park, Loveland, Fort Collins and Longmont, announced a goal of having a 100% non-carbon energy mix by 2030.

The Governor and the Colorado General Assembly worked together this spring to ensure even greater progress with the passage of groundbreaking legislation. New Colorado law sets climate goals for the state, requires our largest utility to achieve 80% reductions in GHG emissions below 2005 levels by 2030, directs state utility regulators to consider the full costs of damages associated with GHG pollution, and establishes a pathway to clean energy for rural utilities.

The availability of affordable renewable generation also opens up vast possibilities for reducing economy-wide emissions by switching from burning polluting fuels to using pollution-free electricity in our cars, homes and businesses—all while saving Coloradans money. In recognition of this potential, Governor Polis opened his term in January by issuing an Executive Order *Supporting a Transition to Zero Emission Vehicles,* which set a goal of 940,000 electric vehicles (EVs) on Colorado roads by 2030, invested the remaining funds from the Volkswagen diesel emissions settlement in zero emission vehicles (ZEVs), and directed state agencies to propose a ZEV rulemaking. To further support the electrification of transportation in our state, Governor Polis signed into law five pro-EV bills passed during the 2019 legislative session, including extending EV and hydrogen vehicle tax credits through 2025 and requiring utilities to invest in EV infrastructure.

In 2018, Coloradans bought about 70% more EVs than the previous year (2017: 4156 EVs purchased; 2018: 7051), and Colorado jumped to become a top five U.S. state for EV market share. To help build-out publicly accessible EV infrastructure and support consumer choice, CEO signed a contract this year to establish fast-charging corridors across the state and worked with the Colorado Department of Transportation and Alliance of Automobile Manufacturers toward a cooperative effort for the ZEV rulemaking with the Air Quality Control Commission.

Thank you to all of our partners for your continued support and commitment to energy efficiency, renewable energy, transportation electrification and energy access for low-income Coloradans.

Will Toor

2 Mission & Vision

Mission

Reduce greenhouse gas emissions and consumer energy costs by advancing clean energy, energy efficiency and zero emission vehicles to benefit all Coloradans.

Vision

A prosperous, clean energy future for Colorado.

To achieve our mission and vision, the Colorado Energy Office (CEO) works through policy and programs focused on zero emission vehicles, energy efficiency, renewable energy and weatherization assistance. CEO is a non-regulatory department within the Governor's Office.

3 Policy Accomplishments

To deliver informed policy analysis and recommendations to the Governor, lawmakers, regulators and the public, CEO works collaboratively with state agencies and energy stakeholders in Colorado and engages external technical expertise. During the 2019 session, CEO monitored, analyzed and worked with the General Assembly on a range of legislation to advance energy efficiency, clean energy, EV, utility and climate policy. CEO engaged with numerous bills during the session and worked with legislators to meet positions of interest aligned with the office's mission and vision. The clean erergy policy success during the fiscal year was due to strong, bi-partisan leadership from bill sponsors, the administration, and broad support from energy stakeholder coalitions.

CEO FY19 Legislation Engagements

- SB19-077 Electric Motor Vehicles Public Utility Services
- SB19-096 Collect Long-term Climate Change Data
- SB19-236 Sunset Public Utilities Commission
- SB19-239 Address Impacts Of Transportation Changes
- HB19-1003 Community Solar Gardens Modernization Act
- HB19-1159 Modify Innovative Motor Vehicle Income Tax Credits
- HB19-1188 Greenhouse Gas Pollution Impact In Fiscal Notes
- HB19-1198 Electric Vehicle Grant Fund
- HB19-1231 New Appliance Energy And Water Efficiency Standards
- HB19-1260 Building Energy Codes
- HB19-1261 Climate Action Plan To Reduce Pollution
- HB19-1272 Housing Authority Property In Colorado—New Energy Improvement District [C-PACE]
- HB19-1298 Electric Motor Vehicle Charging Station Parking
- HB19-1313 Electric Utility Plans To Further Reduce Carbon Dioxide Emissions
- HB19-1314 Just Transition From Coal-based Electrical Energy Economy

[House Bill = HB; Senate Bill = SB]

2019 Legislative Session Success Snapshot

Energy Efficiency

House Bill 19-1231—New Appliance Energy and Water Efficiency Standards

- Updates and adopts standards for new equipment sold in Colorado and requires that certain appliances, plumbing fixtures and other products sold for residential or commercial use meet energy efficiency and water efficiency standards that will be phased in over three years.
- Sale of a non-complying product is punishable through a civil enforcement action by the Attorney General.

House Bill 19-1260—Building Energy Codes

- Requires local jurisdictions to adopt one of the three most recent versions of the International Energy Conservation Code (IECC) , at a minimum, when updating any other building code.

Electric Vehicles

Senate Bill 19-077—Public Utility Implementation of an Electric Vehicle (EV) Infrastructure Program

- Authorizes a public utility to provide charging stations as a regulated or unregulated service.
- Requires utilities to file an application for a program to support transportation electrification every three years starting in 2020 that may include investments or incentives, rates or programs, and customer outreach and education.
- Provides guidance to the Public Utilities Commission on utility EV program evaluation.

Senate Bill 19-239—Addressing Impacts of Changes Related to Commercial Vehicles

- Requires Colorado Department of Transportation (CDOT) to convene a group of stakeholders affected by the adoption of new and emerging transportation technologies and business models to develop policy recommendations to address resulting impacts.
- CDOT will then undertake a rule-making as needed to effectively implement these recommendations.
- Any fees adopted must incentivize multi-passenger trips and use of EVs, and revenues will goto multi-modal transportation and EV infrastructure.

House Bill 19-1159—Modifications to the Income Tax Credits for Innovative Motor Vehicles

- Modifies amounts and extends the number of years of existing income tax credits for the purchase or lease of EVs or hydrogen fuel cell vehicles; current law phases it out at the end of 2021—this bill extends it through the end of 2025.
- Allows ride-sharing companies to claim the full tax credit if vehicles are provided to drivers under a short-term rental program.

House Bill 19-1198—Powers and Duties of the Electric Vehicle Grant Fund

- Provides more flexibility in how the EV Grant Fund is used by allowing funds for administration of charging station grants and to offset charging station operating costs.
- Requires that these funds be continuously appropriated to the Colorado Energy Office.

House Bill 19-1298—Electric Motor Vehicle Charging Station Parking

- Authorizes the owner of a plug-in EV charging station to install a sign that identifies the station.
- If the sign is installed, a person is prohibited from parking in the space if the vehicle is not an EV and using the charging station for parking if the EV is not charging.
- Penalty for a violation is a $150 fine and a $32 surcharge.

Climate/Utility Policy

Senate Bill 19-096—Collect Long-term Climate Change Data

- Requires the Air Quality Control Commission to collect greenhouse gas emissions data from greenhouse gas-emitting entities, report on the data, including a forecast of future emissions, and propose a draft rule to address the emissions by July 1, 2020.

Senate Bill 19-181—Protect Public Welfare Oil And Gas Operations

- Protects public safety, health, welfare and the environment in the regulation of the oil and gas industry by modifying the oil and gas statute and clarifying, reinforcing and establishing local governments' regulatory authority over the surface impacts of oil and gas development.
- Directs the Air Quality Control Commission to review its leak detection and repair rules and to adopt rules to minimize emissions of methane and other hydrocarbons, volatile organic compounds and oxides of nitrogen.

Senate Bill 19-236—Sunset Public Utilities Commission

- Directs the Public Utilities Commission (PUC) to promulgate rules that require an investor-owned utility (IOU) to file with the PUC, for the PUC's approval, a distribution system plan regarding the utility's anticipated distribution system investments.
- Requires an IOU, when submitting a filing to the PUC that includes a proposed retirement of an electric generating facility, to include a workforce transition plan that provides estimates of workforce transitions that will occur as a result of retiring the electric generating facility.
- Directs the PUC to conduct an investigation of financial performance-based incentives and performance-based metric tracking to identify mechanisms for aligning utility operations and investments with various public benefit goals including safety, cost efficiency and emissions reduction.
- Requires the PUC to open a non-adjudicatory proceeding to conduct a survey of public utility retail rates and consider recommendations for providing rate relief in geographic areas with retail rates that are materially greater than the state average.
- Directs the PUC to evaluate the cost of carbon dioxide emissions in certain proceedings (resource planning, energy efficiency planning, beneficial and transportation electrification, renewable energy standard) related to a public utility subject to the PUC's jurisdiction and to promulgate rules to require those public utilities, when submitting filings, to include the cost of carbon dioxide emissions related to the evaluation of electric generation and heating resources.
- Starting in 2020, the PUC is required to establish a base cost of carbon dioxide emissions in an amount not less than $46 a ton and shall modify the cost thereafter based on escalation rates established by the federal government.

- Directs the PUC to promulgate rules requiring generation and transmission utilities to submit resource plans to the PUC for approval.
- Directs the PUC to open a docket exploring whether utilities should join an energy imbalance market or regional transmission organization.
- Directs Xcel Energy to submit a plan for PUC approval that will achieve an 80% reduction in greenhouse gas emissions below 2005 levels by 2030 and lays out criteria for approval; creates a securitization bonding mechanism to reduce the costs associated with early plant retirement; and creates an opportunity to fund workforce and community transition.

House Bill 19-1003—Community Solar Gardens Modernization Act

- Amends the current statute authorizing community solar gardens (CSGs).
- Increases the maximum size of a CSG from 2 megawatts to 5 megawatts.
- Removes requirement that a CSG subscriber's identified physical location be in the same county as, or a county adjacent to, that of the CSG, while retaining the requirement that it be within the service territory of the same electric utility.

House Bill 19-1261—Climate Action Plan To Reduce Pollution

- Sets Colorado statewide goals to reduce 2025 greenhouse gas emissions by at least 26%, 2030 greenhouse gas emissions by at least 50% and 2050 greenhouse gas emissions by at least 90% of the levels of greenhouse gas emissions that existed in 2005.
- Specifies that Air Quality Control Commission (AQCC) will take into account in implementing policies and promulgating rules to reduce greenhouse gas pollution, including the benefits of compliance and the equitable distribution of those benefits, the costs of compliance, opportunities to incentivize clean energy in transitioning communities, and the potential to enhance the resilience of Colorado's communities and natural resources to climate impacts.
- Directs AQCC to consult with the PUC with regard to rules that affect the providers of retail electricity in Colorado.

House Bill 19-1272—Housing Authority Property In Colorado New Energy Improvement District

- Clarifies housing authority participation in Colorado Commercial Property Assessed Clean Energy (C-PACE), a program administered by the Colorado New Energy Improvement District (NEID), through which an owner of eligible property, including residential properties having at least five dwelling units, may finance energy improvements.

House Bill 19-1314—Just Transition From Coal-based Electrical Energy Economy

- Creates the Just Transition Office in the Division of Employment and Training in the Department of Labor and Employment.
- Provides benefits to coal transition workers to enable them to support themselves and their families and access education and training for high-quality jobs.
- Provides grants to eligible entities in coal transition communities that seek to create a more diversified, equitable and vibrant economic future for those communities.
- Requires an electric utility that proposes to retire a coal-fueled electric generating facility to submit to the office a workforce transition plan at least 90 days before the retirement of the facility.

To further deliver on its mission of reducing GHG emissions and consumer energy costs by advancing clean energy, energy efficiency and ZEVs to benefit all Coloradans, CEO intervenes in proceedings at the Colorado Public Utilities Commission (PUC).

Xcel Energy Colorado Energy Plan (PUC Proceeding 16A-0396E)

In August 2018, the PUC approved the Colorado Energy Plan (CEP), Xcel Energy's roadmap to develop a cleaner energy mix and reduce carbon emissions in the state. The CEP includes retiring 660 MW of coal-fired generation roughly a decade early, which will reduce carbon emissions 60% by late 2025 from 2005 levels. The CEP also includes the acquisition of 1,100 MW of wind, 700 MW of solar and 275 MW of battery storage. As a result, Xcel Energy's portfolio will comprise 55% renewable electricity generation by 2025.

CEO FY19 PUC Engagements

- 17M-0204E Xcel Energy Time-of-Use Pilot
- 18A-0606EG Xcel Energy Demand Side Management Plan
- 18A-0279E Black Hills Demand Side Management Plan
- 17M-0694E Renewable Energy Standard, Electric Resource Planning, Qualifying Facilities, Distribution System Planning Pre-rulemaking
- 18R-0492E Qualifying Facilities Rules
- 18A-0676E Black Hills Time-of-use Rate Plan
- 18M-0082EG Line extensions Pre-rulemaking
- 18AL-0852E Xcel Energy Line Extension Policy
- 17I-0692E Electrification of Transportation Investigatory Proceeding
- 17A-0797E Xcel Energy Accelerated Depreciation and Renewable Energy Standard Adjustment Reduction Application
- 16A-0396E Xcel Energy Electric Resource Plan 2017 (Colorado Energy Plan Portfolio)
- 18A-0194E Xcel Energy Home Area Network Application
- 18F-0866E Delta Montrose Electric Association Formal Complaint Against Tri-State

- 19R-0096E Commission Proceeding Amending the Rules Regulating Electric Utilities
- 19V-0311E Tri-state Electric Resource Plan Request for Variance
- 18A-0569E EVRAZ Contract
- 19AL-0268E Xcel Energy Phase I Rate Case
- 19AL-0290E Xcel Energy Electric Vehicle Rate
- 19A-0369E Xcel Energy Renewable Energy Plan

4 Program Accomplishments

Building Energy Codes

CEO provides education at no cost to local governments and stakeholders to assist with building energy code adoption. In-depth, in-person trainings and one-hour webinars are taught by code experts in residential and commercial code topics. In-person training is available upon request and can be scheduled for local government staff such as code officials, inspectors and planners as well as other building industry stakeholders including builders, designers, engineers, contractors and architects. CEO also provides no-cost, customized technical assistance to jurisdictions to support the adoption of new codes and code enforcement.

In FY19, CEO conducted 18 building energy code webinars with a total attendance of 339 and 19 in-person trainings across the state with a total attendance of 532. CEO engaged in outreach to the City and County of Denver, Fort Morgan, Jefferson County, Trinidad, Weld County and Westminster.

Passed during the 2019 legislative session, HB 19-1260 updated a 2007 state law that established a minimum building energy code. The revised law requires local jurisdictions in Colorado to adopt and enforce one of the three most recent versions of the International Energy Conservation Code (IECC) upon updating any other building code. The law also requires local jurisdictions to report building codes to CEO by Jan 1, 2020 and encourages reporting changes thereafter to CEO.

In addition to trainings, CEO provided technical assistance to 12 jurisdictions resulting in two counties—Adams County and Jefferson County—adopting the 2018 IECC in FY19. Several additional Colorado jurisdictions began the process of adopting the 2018 IECC during the fiscal year.

Charge Ahead Colorado

To improve air quality, reduce greenhouse gas pollution, encourage deployment of EVs across the state and support implementation of the Colorado Electric Vehicle Plan, CEO and the Regional Air Quality Council (RAQC) jointly administer the Charge Ahead Colorado (CAC) grant program. CAC grants are available for EVs and community-based Level 2 and DC fast-charging (DCFC) stations.

While the RAQC administers CAC grants for the Denver Metro area, CEO manages grants for all areas of the state outside of Denver Metro. Since the program's inception in 2013, Charge Ahead Colorado has awarded grants for more than 930 EV charging stations across the state.

CEO's FY19 work through CAC awarded 37 grants ($650,606) for 62 charging stations constructed during the fiscal year. These 62 stations comprise 56 Level 2 and six DCFC charging units which provide 123 charging ports. Fifty-two of these stations are public, and 10 are private. Of these 62 CEO-funded CAC projects, 20 were in Front Range locations, and 42 were in non-Front Range locations.*

* CEO defines Front Range locations as counties along the I-25 corridor from Ft. Collins to Colorado Springs—Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, El Paso, Jefferson and Larimer.

In FY19, the RAQC funded 143 stations ($1,537,307) and 39 EVs ($322,140) for state and local governments as well as non-profits, which represented 76 CAC grant awardees.

Through programs like CAC, Colorado is a leading state in the U.S. for public investments in EV charging infrastructure. The CAC program will continue to play an important role in helping to fund a portion of the thousands of new charging stations needed to support the 2030 goal of 940,000 EVs in Colorado.

CEO FY19 Charge Ahead Colorado Awardees

- Town of Fraser
- Pueblo County
- Town of Mancos
- San Miguel County
- Larimer County
- Gunnison County Electric Association, Inc
- Town of Rico
- Centerra Metro Distict No. 1
- Feather Petroleum Company
- Greeley Nissan
- Sangre de Cristo Electric
- City of Salida
- Springs Inn, LLC
- Town of Frisco
- Ross Montessori School
- CDHS
- Main Street Management, LLC
- La Plata Electric Assn.
- Atlasta Solar (Town of Delta)
- Grand Timber Lodge
- Walking Mountain Science Center
- Harmony 23 LLC
- Commerce Center Hotel, OpCo, LLC—Embassy Suites
- The Smiley Building
- San Isabel Electric Association, Inc.
- Timnath Trail, LLC
- City of Loveland
- City of Fort Collins
- SCCOG Transit
- City of Woodland Park
- Traer Creek Plaza LLC
- Yampa Valley Electric Association
- Purple Mountain Hospitality II
- Colorado Gators, Inc.
- White River Electric Association
- Alpine Bank
- Colorado State University

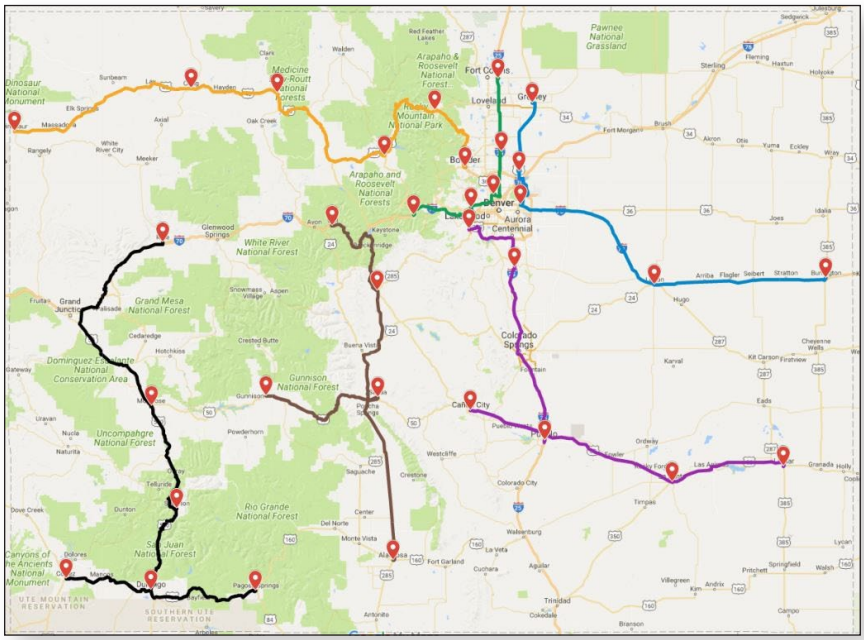
Charge Ahead Colorado Success Snapshot—White River Electric Association

A Charge Ahead Colorado grant to the White River Electric Association (WREA), a northwestern Colorado rural electric cooperative, now allows Meeker to offer both community members and traveling EV motorists Level 2 and DCFC charging at two stations. The Meeker Chamber of Commerce identified EV charging stations as an important part of the town's tourism portfolio. To cover a portion of the Charge Ahead Colorado matching requirement, WREA also received a $10,000 mini-grant from the Colorado Department of Local Affairs Main Streets Program. Near restaurants, hotels, shops and town parks, the charging stations are located at one end of the Flat Tops Trail Scenic Byway, which contributes to Colorado's efforts to electrify scenic and historic byways across the state. EV charging is provided at a competitive price at $.15/kWh for the Level 2 unit and $.25/kWh for the DCFC unit. WREA notes charging station usage has been steady by tourists since the units create a bridge from the north highway arteries to the main I-70 corridor.

EV Fast-Charging Corridors Grant

In FY19, CEO completed a competitive solicitation and awarded a $10.33 million grant to the company ChargePoint to build a first phase of EV fast-charging stations across the state. The fast-charging stations will be located in communities at 33 sites across six corridors comprised of interstate, state and U.S. highways. When finished, these stations will provide fast charging for EVs every 30–50 miles on most major corridors in the state. This grant also helps implement Colorado's Beneficiary Mitigation Plan and Colorado's commitment to the multi-state Regional Electric Vehicle West Memorandum of Understanding.

EV Fast-Charging Corridors Site Locations



ReFuel Colorado

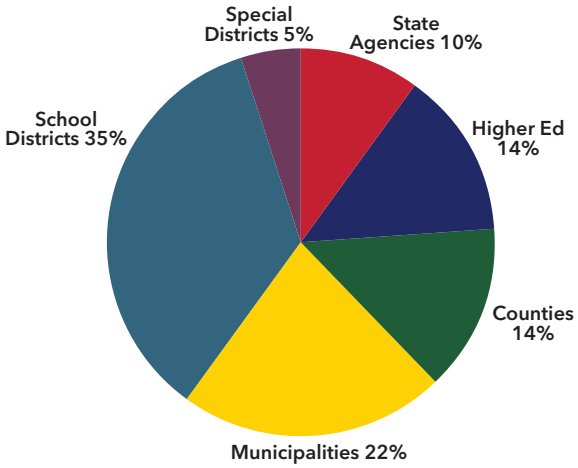
CEO's Refuel Colorado program works to advance the adoption of alternative fuel vehicles including EVs. Refuel Colorado Coaches—known as Refuel Coaches—provide coaching services for alternative fuel vehicles(AFVs)/EVs and infrastructure development in every county in the state. Refuel Coaches help consumers, local governments, fleets, workplaces and multiunit housing developments identify monetary savings, grant opportunities and other advantages of deploying AFVs/EVs and infrastructure. In FY19, ReFuel Colorado hosted 12 ride-n-drive events with a total attendance of 601. Two of the 12 ReFuel Colorado ride-n-drive events were held in the Denver Metro area, and 10 were held in other parts of the state. Ninety-two EVs were purchased through ReFuel Colorado-organized group buy events during the fiscal year.

Energy Performance Contracting

Through CEO's Energy Performance Contracting (EPC) program, public jurisdictions—state agencies, colleges and universities, counties, cities and towns, school districts and special districts—work with a pre-qualified energy services company (ESCO) to identify energy improvements and annual utility savings through a proven five-step process. An investment grade audit establishes parameters that allow public sector entities to seek capital investment that will be repaid through guaranteed utility savings resulting from energy efficiency improvements, facility repairs and upgrades.

In FY19, CEO's outreach and education focused on EPC in Colorado while continuing to provide technical services to program participants. During FY19, CEO supported 154 public jurisdictions across the state through EPC. Over the course of the fiscal year, CEO received 23 Memorandums of Understanding for program participation, provided technical support for 17 investment grade audits, supported five projects from contract execution into implementation, and assisted as seven projects transitioned from construction phase to post-implementation, which includes three years of measurement and verification.

EPC Portfolio Distribution by Market Segment for 211 Executed Projects



To date, these 154 EPC clients have planned and implemented $586 million in energy improvements—energy efficiency upgrades, water metering and solar PV—which will account for an estimated $35 million in annual energy cost savings.

Since initial program work began in 1988 and an official launch in 1995 as Rebuild Colorado, the EPC program has completed 211 projects for a variety of public jurisdictions across the state.

Energy Performance Contracting Success Snapshot—Town of Walden Floating Solar

The Town of Walden Water Treatment Facility is now able to treat drinking water using renewable energy provided by a floating solar photovoltaic (PV) array that will provide energy savings for the next 25 years or more. CEO's Energy Performance Contracting program and solar experience along with an Energy/Mineral Impact Assistance Fund Grant from the Colorado Department of Local Affairs helped bring this system online. This project marks the first time a floating solar PV array has been installed in a climate setting like Walden's, which includes temperatures ranging from -48 degrees to 94 degrees Fahrenheit along with more than one foot of rainfall and five feet of snowfall per year. The Town of Walden's floating solar array is being monitored by other Colorado municipalities interested in reducing energy usage and costs.

Energy Savings for Schools

In FY19, CEO's Energy Savings for Schools (ESS) program shifted from engaging individual schools and providing audits for capital improvements to engaging with entire districts around capacity-building. By institutionalizing energy knowledge—occupant engagement and resource development—school districts can reduce energy costs outside of capital improvements.

Persistent shortages in school district resources translate directly to prioritization of tasks outside of energy management including safety, transportation and teaching.

After CEO developed programmatic strategies and materials in early FY19, ESS enrolled three school districts—Gunnison Watershed School District, Sheridan 2 (Englewood/Denver County) and The Vanguard School—Charter Campus (Colorado Springs/El Paso County).

In FY19, ESS school districts were able to increase energy awareness, modify behaviors, save money and identify ways to increase operational efficiency. ESS participant schools marked the following achievements during the fiscal year.

Gunnison Watershed School District

- Developed a resource management plan
- Engaged eight classes in a Month of Impact activity, a mini-energy competition/learning period
- Installed two eGauges
- Engaged 243 students and invested 93 staff hours

Sheridan 2

- Developed a resource management plan
- Conducted Month of Impact activities at Alice Terry Elementary (engaged 210 students) and Fort Logan Northgate (engaged 25 students)
- Conducted student-led school energy and water assessments
- Installed three eGauges
- Performed renewable energy demonstrations
- Invested 190 staff hours

The Vanguard School—Charter Campus

- Developed a resource management plan
- Planned and completed an electronics audit
- Installed an eGauge
- Engaged 30 students and invested 18 staff hours

The ESS program also worked with 30 additional schools to provide technical support for energy efficiency project implementation in FY19. This technical support ranged from eGauge and lighting installations to project prioritization. Of these 30 schools, 13 utilized Supplemental Environmental Project (SEP) funds totaling over $450,000 to complete activities ranging from lighting replacements and boiler upgrades to plumbing replacements. These improvements resulted in savings of more than 227,400 kWh, 2000 therms, 340,000 gallons of water and $23,000.

ReNew Our Schools

During FY19, CEO worked with Pueblo County School District (PCSD) 70 to develop a performance contract for energy efficiency building improvements. Utilizing CEO's EPC program framework and engineering support, PCSD 70 implemented facility upgrades—LED lighting, roof replacements, high efficiency HVAC and boilers—to improve equipment performance and reduce energy consumption for the 25 buildings included in the project. PCSC 70 anticipates these improvement measures will result in 4.4M kWh in annual energy savings with annual cost savings exceeding $600,000.

In addition to the EPC support provided to PCSD 70, CEO funded the installation of eight eGauge electric meters for use in the district-wide ReNew Our Schools (RNOS) competition. The RNOS competition brought industry experts to PCSD 70 to help students and staff investigate, document and impact behaviors that affect energy use. Over the course of the five week RNOS competition, the eight participating PCSD 70 schools saved 11,943 kWh. In addition to these energy savings, seven of the eight schools completed student-led audits, eight environmental clubs were formed and over 25 mentor meetings took place with local energy professionals.

Agricultural Energy Efficiency

In FY19, CEO contracted with a new consultant to administer its Agricultural Energy Efficiency (AgEE) program. With the new program consultant in place, initial AgEE program work for the year focused on streamlining energy audit reports and creating an additional funding source for Colorado agricultural producers. To support AgEE project implementation, CEO developed a financial incentive offering designed as an additional funding source for on-farm energy efficiency projects.

Program marketing and outreach to agricultural producers during the fiscal year included presentations at the Colorado Farm Show and the Southern Rocky Mountain Agricultural Conference. An AgEE stakeholder meeting introduced the new program consultant to key agricultural points of contact and an energy smart agriculture workshop series at western slope locations engaged producers, utilities, USDA Natural Resources Conservation Service field offices and other stakeholders.

AgEE program FY19 accomplishments included the receipt of 48 audit applications and completion of 39 energy audits (18 mixed use, 16 irrigation, five greenhouse) leading to the identification of energy/GHG savings totaling over 1.5 million kWh, 20,000 therms and an estimated 1,287 metric tons of carbon dioxide equivalent or CO2e. Audit report findings led to the initial submission of over $500,000 in state and federal energy efficiency project grants.

AgEE achievements during FY19 also included the development of nine renewable energy feasibility studies and outreach to 180 producers who enrolled in the program over the past four years to review previous audit report findings and new funding options. Outreach efforts also reviewed project implementation and verified 67 energy efficiency measures totaling more than 980,000 kWh and $100,000 in savings. Five of these measures were financed through the new financial incentive offering, totaling more than $15,000 in CEO funding.

Industrial Strategic Energy Management

To help industrial organizations in the state improve energy performance through behavioral changes at operation sites, CEO launched an initiative to develop a pilot for the Colorado Industrial Strategic Energy Management (I-SEM) program in early 2019. Through educational workshops and energy coaching, the I-SEM program will help participants establish energy management system elements such as policies, teams and employee engagement processes to yield facility-wide savings. FY20 will be the official launch year of CEO's I-SEM pilot program.

In FY19, CEO conducted four strategic I-SEM outreach events and recruited three future pilot program participants. Through an informational webinar and stakeholder engagement, CEO was able to build relationships with key contacts across the state (including the Office of Economic Development and International Trade) to identify potential participants in the northern Front Range region. CEO received outreach support from Black Hills Energy and San Isabel Electric Association to help identify potential participants in the Colorado Springs, Pueblo and Trinidad areas.

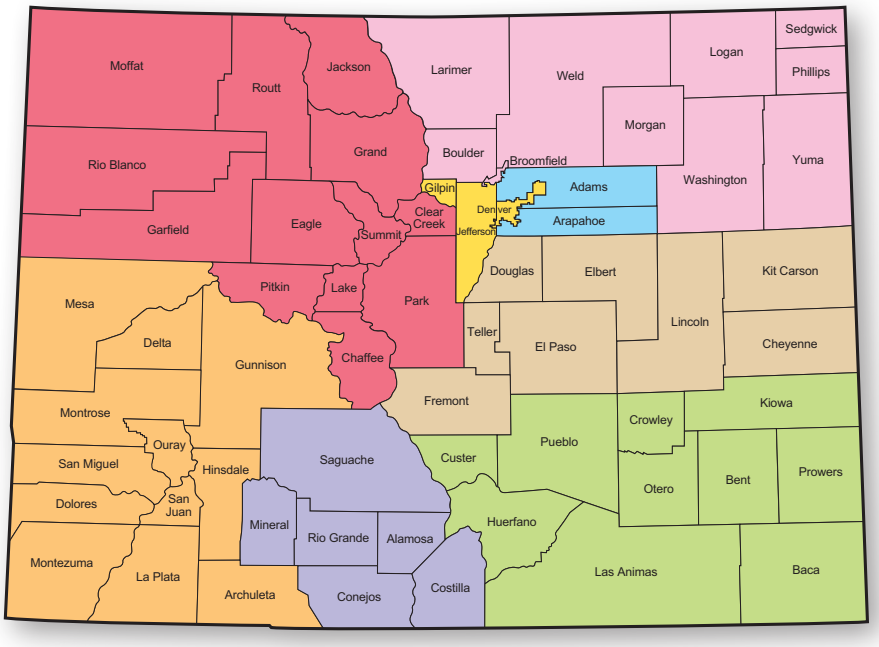
Additional FY19 I-SEM results included two energy walkthroughs and coaching calls with Carestream and Fort Collins Water Production (FCWP), and three informational meetings with Xcel Energy, Platte River Power Authority and Fort Collins Utilities.

Weatherization Assistance Program

Low-income households in Colorado spend a larger portion of their income on home energy costs than higher income households spend, which is known as energy burden. High energy burdens can force difficult choices between paying energy bills and buying food, medicine or other household essentials. In partnership with local service provider agencies and the U.S. Department of Energy, CEO offers a free Weatherization Assistance Program (WAP) to Colorado's low-income residents.

WAP works to maximize energy cost savings for each program participant by providing cost-effective measures that reduce wasted energy and lower costs while improving the overall comfort and safety of a home year-round. Through WAP, CEO coordinates funding sources, establishes performance standards, conducts technical training, and performs reviews to ensure compliance with federal and state requirements.

In FY19, CEO's WAP completed 2,096 projects with an estimated annual cost savings of $744,000 for program participants. These WAP projects will provide an estimated annual energy savings of 2,515,200 kWh of electricity and estimated annual gas savings of 440,000 therms. WAP FY19 installed measures included air leakage, ASHRAE fan, attic insulation, duct insulation, duct sealing, furnaces, LEDs, pipe insulation, refrigerators, replacement doors and windows, rooftop solar, storm windows, subspace insulation, wall insulation and water heaters. Of these 2,096 WAP projects, 1024 were in Front Range locations, and 1072 were in non-Front Range locations.*



Weatherization Service Providers

Arapahoe County Weatherization Division
303-636-1982 | www.arapahoegov.com

Energy Outreach Colorado (EOC)
303-226-5069 | www.energyoutreach.org
[EOC serves multifamily residence buildings statewide]

Energy Resource Center
719-591-0772 | Colorado Springs
720-236-1321 | Denver
970-617-2801 | Loveland
719-587-9492 | San Luis Valley
www.erc-co.org

Housing Resources of Western Colorado
970-241-2871 | www.hrwco.org

Northwest Colorado Council of Governments
1-800-332-3669 | www.nwccog.org

Pueblo County Department of Housing and Human Services
719-583-6110 | http://county.pueblo.org

[Updated Program Year 2019-2020]

Weatherization Assistance Program Success Snapshot—Rooftop Solar within WAP

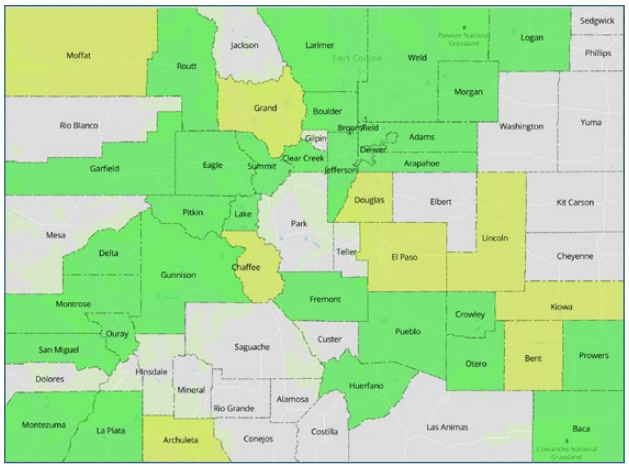
To help increase solar access for low-income Coloradans, CEO offers rooftop solar photovoltaic (PV) as a measure within its Weatherization Assistance Program (WAP) to specifically target residential electricity expenditures. In 2016, Colorado was the first state in the nation to receive approval from the U.S. Department of Energy to integrate rooftop PV into WAP. CEO has installed 85 rooftop solar arrays within WAP, totaling 259.4kW of interconnected renewable resource. With an average array size of 3.1kW, rooftop solar within WAP provides an average customer savings of more than $450 per year.

*CEO defines Front Range locations as counties along the I-25 corridor from Ft. Collins to Colorado Springs—Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, El Paso, Jefferson and Larimer.

Colorado Commercial Property Assessed Clean Energy

Colorado Commercial Property Assessed Clean Energy (C-PACE) , which is administered by the New Energy Improvement District, provides financing for energy efficiency, renewable energy and water efficiency projects at existing buildings as well as for new construction projects that will meet or exceed 2015 IECC/ASHRAE 90.1-2013. For new construction, C-PACE offers long-term financing for up to 20% of the total eligible construction cost and can displace more expensive types of capital. The financing is no-recourse and repayable over up to 25 years, and it is secured by a voluntary assessment recorded against the property. The repayment obligation can be transferred to a new owner if the building is sold.

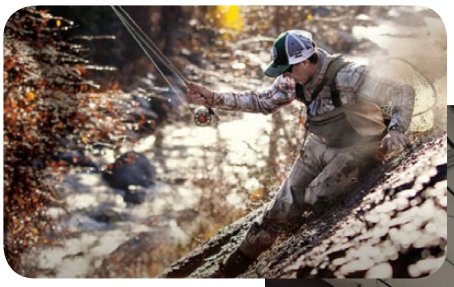
Colorado C-PACE Signatory Map by County

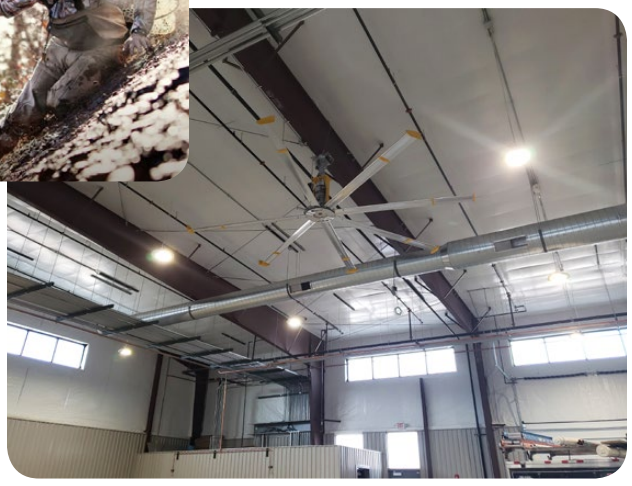


PARTICIPATING COUNTIES
IN-DISCUSSION COUNTIES
NON-PARTICIPATING COUNTIES

In FY19, C-PACE conducted 24 projects financing $28.3 million in energy improvements with projected lifetime energy cost savings of over $15 million and projected energy savings of 23.6 million kBtu/year. FY19 C-PACE installed measures included solar PV, energy efficiency measures including HVAC, control systems and new construction projects built to or exceeding 2015 IECC. Of these 24 C-PACE projects, 21 were in Front Range locations, and three were in non-Front Range locations.* In FY19, C-PACE added three signatory counties—Ouray, Clear Creek and Otero—bringing the total of participating C-PACE counties in Colorado to 31.

C-PACE Success Snapshot—Mayfly Outdoors





Mayfly Outdoors manufactures premium fly-fishing equipment and other outdoor products that require high-precision, energy-intensive machines and tightly controlled ambient temperatures. To ensure its new 41,000 sf headquarters and manufacturing facility in Montrose would be as efficient as possible, the company sought C-PACE financing to incorporate energy efficiency into the building design. C-PACE facilitated $994,500 in affordable, long-term, non-recourse financing for Mayfly Outdoor's new facility, which complies with the 2015 IECC, utilizes LED lighting and low-e glass, and is geothermal-ready.

*CEO defines Front Range locations as counties along the I-25 corridor from Ft. Collins to Colorado Springs—Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, El Paso, Jefferson and Larimer.

Colorado Residential Energy Upgrade Loan

The Colorado Residential Energy Upgrade Loan—known as the RENU loan—is a statewide residential loan program sponsored by CEO in partnership with Elevations Credit Union. The RENU loan makes home energy upgrades easy and affordable by offering low-cost, long-term financing for energy efficiency and renewable energy improvements.

In FY19—the first full year of operation for the program—RENU conducted 291 projects, directly financing more than $4.5 million in energy projects and supported a total investment of over $5 million. Of these 291 completed projects, 217 included a solar photovoltaic (PV) component, which installed more than 1.42 MW of PV capacity on residential rooftops in Colorado. Installed by RENU-authorized contractors, FY19 RENU measures included solar PV, insulation and air sealing, space heating and cooling, water heating, windows and doors. Of these 291 RENU projects, 177 were in Front Range locations, and 114 were in non-Front Range locations.* In FY19, CEO added 46 RENU-approved contractors for a total of 105 and program coverage to all 64 counties by the end of the fiscal year.

CEO FY19 Studies

- Electric Vehicle Costs and Consumer Benefits in Colorado in the 2020–2030 Timeframe
- Xcel Energy Electric Vehicle Cost-Benefit Analysis
- Direct Current Fast-Charging (DCFC) Rate Design Study
- Life-Cycle Emissions and Costs of Medium- and Heavy-Duty Vehicles in Colorado Market Study
- Renewable Natural Gas (RNG) in Transportation: Colorado Market Study
- The Future of Energy Storage in Colorado—Opportunities, Barriers, Analysis and Policy Recommendations

*CEO defines Front Range locations as counties along the I-25 corridor from Ft. Collins to Colorado Springs—Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, El Paso, Jefferson and Larimer.

5 A Focus on Local Government

The following is an article published in the June 2019 issue of Colorado Municipal League's *Colorado Municipalities* magazine.

STATEWIDE PERSPECTIVE:

COLORADO'S CLEAN ENERGY FUTURE, AND HOW LOCAL COMMUNITIES ARE LEADING THE WAY

By Will Toor, Colorado Energy Office executive director

Why Clean Energy Matters

Reducing greenhouse gas emissions and a statewide transition to clean energy are integral to preserving and protecting Colorado's way of life and central to the mission of the Colorado Energy Office (CEO). Transitioning to clean energy preserves and protects the health of our communities and natural environment, provides access to lower-cost clean energy resources for rural and urban areas, increases investment and economic growth opportunities, and expands clean energy jobs.

A statewide transition to clean energy also underpins Colorado's commitment to climate action. The warming climate is already impacting communities across the state. Colorado is very vulnerable to these impacts — increased risks of catastrophic wildfires, greater likelihood of droughts, increased flood risks, not to mention the loss of alpine ecosystems and the negative impacts to our ski industry. A recent study found that if we do not limit emissions, the average Denver summer will have more than 34 days a year over 100 degrees by the end of the century. Water, energy, public health, transportation, agriculture, and tourism — climate challenges will affect everyone and require collaborative solutions involving state and local governments, industry across sectors and communities.

To address Colorado's two largest sources of emissions — the power sector and transportation — the state is working to transition to 100 percent clean electricity generation by 2040 and rapidly expand the electrification of vehicles. By engaging with and supporting local communities, CEO will cultivate increased consumer choice, consumer cost savings, economic growth, and energy diversification. Communities across the state should have access to the economic, health, and environmental benefits of emissions reduction.

CEO and other state agencies (Colorado Department of Local Affairs, Office of Economic Development and International Trade,

Colorado Department of Public Health and Environment, and the Colorado Department of Transportation) currently are working in partnership on ways to bolster Colorado's resilience and help communities achieve clean energy and climate mitigation goals.

The Power of Cities and Towns to Create a Clean Energy Future

Leadership from municipalities is critically important in the fight against climate change. Cities and towns are uniquely positioned to advance solutions in buildings, locally sited renewable energy, and transportation. Local communities across the state are already undertaking sustainability solutions, climate action, and clean energy transition planning with a focus on energy efficiency, renewables, and emissions reduction.

In addition to state resources, nongovernmental organizations have formed to help cities and towns move forward. The Compact of Colorado Communities (*compactofcoloradocommunities.org*) is focused on building capacity of local governments and communities to rapidly scale up and advance climate action planning. Colorado Communities for Climate Action (CC4CA, *cc4ca.org*) is a coalition of local governments working for state and federal climate-protection actions to complement local efforts.

To get involved and move forward now with climate action and clean energy transition planning, municipalities can:

1 Adopt updated energy codes for new buildings

One transformational lever available to local governments is adopting the most recent International Energy Conservation Code (IECC). IECC addresses the design of building envelopes and mechanical, lighting, and power systems through requirements that emphasize energy performance. The most cost-effective way to improve the energy efficiency of buildings is at the time of construction. Adopting a building energy code reduces energy demand and emissions for the life of a building while protecting the health and safety of its occupants. Cities and towns can also build EV-ready requirements into their codes as both Fort Collins and Golden have. More how-to information is available from the Southwest Energy Efficiency Project at *swenergy.org/cracking-the-code-on-ev-ready-building-codes*.

CEO provides no-cost, customized technical assistance for the implementation and enforcement of building codes to municipal governments and boards of county commissioners. CEO also provides residential and commercial energy codes education to builders, designers, engineers, and architects through in-person trainings and webinars taught by code experts. Colorado's training efforts have placed the state in the position where over 90 percent of construction activity occurs in communities that have adopted the 2009 IECC or newer — a list of these local building energy code leaders can be found at *colorado.gov/energyoffice/energy-codes*.

By adopting requirements that go beyond 2009 IECC, municipalities can go further, saving residents and businesses even more money in energy bills while preparing buildings to be near net zero energy, in which renewable energy generated by on-site solar equals or exceeds the net energy use of the building over the course of the year. Fort Collins, Lone Tree, Louisville, Telluride, Trinidad, Parker, and Vail have already adopted 2018 IECC, and a number of communities have adopted custom codes that go well beyond the IECC.

2 Promote energy efficiency and renewable energy in existing buildings and homes

Commercial buildings and residential homes consume more than 42 percent of energy in Colorado. By utilizing energy efficiency and renewable energy, Colorado building owners and residents can realize reductions in monthly utility bills, improved indoor air quality, enhanced comfort and health, as well as increased property values.

CEO's Energy Performance Contracting program provides an innovative financing technique that allows public jurisdictions to use utility cost savings to pay for efficiency upgrades to facilities. CEO also partners with Western Resource Advocates to promote opportunities within EPC for water efficiency and water meter upgrades. To date, 36 cities and towns have utilized EPC to improve energy and water efficiency performance of municipal buildings, libraries, parks, community centers as well as water and wastewater treatment plants in communities across Colorado; a list of these municipalities can be found at *colorado.gov/energyoffice/energy-performance-contracting*.

Cities and towns have the ability to promote sustainable choices and behaviors by their residents. Building owners can use CEO's Colorado Commercial Property Assessed Clean Energy (C-PACE) program

(*copace.com*) to modernize building energy infrastructure, lower energy costs, and increase building comfort and asset value — all with no upfront costs. C-PACE allows owners of eligible commercial and industrial buildings to finance up to 100 percent of energy efficiency, renewable energy, and water conservation improvements.

Homeowners interested in energy efficiency and renewable energy projects for their homes can utilize CEO's Colorado Residential Energy Upgrade (RENU) Loan (*colorado.gov/energyoffice/colorado-renu-loan*), a low-cost statewide residential loan program. Eligible home energy improvement projects include HVAC equipment, insulation and air sealing, windows, ENERGY STAR appliances, solar PV, and solar thermal. CEO pre-authorizes contractors who provide statewide service coverage to all 64 counties.

Cities and towns also can require disclosure of energy use in existing buildings. The City of Denver released its Energize Denver benchmarking building ordinance in 2018. Buildings in Denver larger than 25,000 square feet are required to annually assess and report energy performance using the free ENERGY STAR Portfolio Manager tool available at *energystar.gov*. Denver publishes the building energy performance data at *energizedenver.org* to enable the market to better value energy efficiency.

3 Embrace the transition to electric vehicles

In Colorado, transportation greatly contributes to air pollution. Children and adults with asthma and other chronic health conditions are especially vulnerable to this pollution. In January, Gov. Jared Polis issued an Executive Order " Supporting a Transition to Zero Emission Vehicles" to accelerate the widespread electrification of cars, buses, trucks, and other vehicles across Colorado to provide clean air, public health, and climate benefits. This transition also delivers substantial economic benefits, from lowered consumer operation costs to economic development and jobs to build the infrastructure that supports electrification.

Colorado cities and towns are already working toward this transition and EV-readiness in their communities, and municipalities can follow the lead of those already stepping up and taking advantage of available planning toolkits and funding opportunities to support this transition.

GoEV City (*goevcity.org*) provides a toolkit of local policies, strategies, and programs to help Colorado cities advance transition to EVs. GoEV City's approach to transportation electrification includes policy recommendations for public transit, municipal fleets, taxis, ride-hail services, and personal car ownership. GoEV City's tools have been implemented in cities, counties, states, and utilities in Colorado and across the country.

Managed by CEO and the Regional Air Quality Council, Charge Ahead Colorado provides funds to local governments for EV chargers and EVs. To date, Charge Ahead Colorado has awarded 50 municipalities a total of 221 EV chargers and six municipalities a total of 53 EVs. More information and a list of Charge Ahead Colorado municipal awardees can be found at *colorado.gov/energyoffice/charge-ahead-colorado*.

Refuel Coaches (*colorado.gov/energyoffice/refuel-coaching*) are available statewide and free of charge through CEO's Refuel Colorado program to help municipalities identify advantages, monetary savings, and available incentives associated with converting to electric fleets. Refuel Coach 4CORE (*fourcore.org*), through Ride And Drive EV events, has increased consumer awareness and EV ownership in Durango.

In 2018, the City of Fort Collins developed an Electric Vehicle Readiness Roadmap to support current and future EV adoption within its community. It includes items for its efforts to inform policies and programs, and strategies for increasing and leveraging investment in EVs and charging infrastructure.

As we move toward a prosperous and healthy clean energy future for Colorado, no one is better suited to help maximize the benefits of this transition than local governments, which understand the unique needs of their communities. The Colorado Energy Office looks forward to a state and local partnership to achieve this clean energy vision.

For more information about CEO programs for municipalities, visit *colorado.gov/energyoffice*.

In FY19, CEO helped support the Department of Local Affairs (DOLA) with its newly launched Renewable/Clean Energy Challenge grant program. CEO worked closely with DOLA regional representatives to help ensure energy policy, consumption, generation and efficiency considerations were reviewed and potential support through existing CEO programs was discussed with applicants.

6 Looking Ahead

Looking ahead to the next fiscal year, CEO will work to support the implementation of a ZEV standard in Colorado and key legislation passed in 2019, including HB19-1260 (building energy codes), HB19-1261 (greenhouse gas pollution targets), HB19-1314 (just transition), SB19-77 (utility EV plans), SB19-236 (modernizing utility regulation and implementing clean energy plans), and SB19-239 (incentivizing EVs and shared vehicle trips).

In addition to operating existing programs that support agricultural energy efficiency, low- income weatherization, energy efficiency in schools and financing for residential and commercial energy efficiency and renewables, CEO will launch a new program supporting energy efficiency in the cannabis industry. CEO will also engage on clean energy and climate action before regulatory bodies such as the PUC, the Air Quality Control Commission, and the Transportation Commission.

Next year CEO will also lead several research projects that will help shape future policy and programs. The largest will be developing a roadmap for reducing greenhouse gas pollution in Colorado consistent with the goals established in HB19-1261. This will be a multi-agency effort led by CEO with active participation from the Colorado Department of Transportation, Colorado Department of Public Health and Environment, Colorado Department of Agriculture and Department of Natural Resources. This analysis will quantify future projected pollution emissions under current legislation and programs, compare findings to goals set by HB19-1261 and model impacts of a range of potential strategies for achieving these goals. A stakeholder process will ensure diverse communities across the state are considered and able to provide input, including those most impacted by pollution, climate change and economic transition. CEO will release an early action analysis in the spring of 2020 that will provide recommendations on “no regrets” strategies that should be pursued in the near term and a full roadmap in fall of 2020.

In FY20, CEO will also lead several sector-specific analyses:

- A beneficial electrification study will examine the potential to decarbonize or electrify equipment that burns fossil fuels—primarily for space and water heating—in residential and commercial buildings. To be considered beneficial, electrification must reduce GHG pollution—specifically carbon dioxide and methane emissions. The goal of the analysis will be to quantify the potential net reduction in GHG emissions on a technology, sector and utility basis and assess related air quality benefits. The study will provide an analysis of market barriers that impede beneficial electrification efforts as well as policy and program recommendations that could help accelerate adoption of electrification technologies that offer economic and environmental benefits.
- A clean fuels standard feasibility study—also known as a low carbon fuels standard—will examine the potential for implementing a requirement that refineries and fuel importers gradually make fuels cleaner. As with beneficial electrification, a clean fuels standard could both reduce GHG emissions and improve public health by reducing harmful pollutants. To inform a recommendation on whether or not a clean fuels standard might make sense for Colorado, the study will examine emissions benefits, economic development opportunities in rural areas from biofuels such as renewable natural gas, and costs to industry and consumers.
- In coordination with other western states, a regional electricity markets study will examine the potential costs and benefits of joining larger regional electricity markets including the Southwest Power Pool and the California Independent Systems Operator. Regional markets could allow Colorado utilities access to renewable energy over a larger geographical area, potentially making it cheaper and easier to move toward very high levels of renewable electricity.
- Additional studies to be undertaken include renewable natural gas potential, EV marketing and education, and opportunities for increasing energy efficiency in oil and gas operations.

COLORADO
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