# AGENDA ITEM or FINAL CONTRACT REVIEW SUBMITTAL FORM

**Agenda Item:** Ratification of Cty Manager's Signature; Letter of

**Action Requested:** Board of County Commissioners' Signature

**Parties to the Agreement:**

**Term Begins:** **Term Ends:** **Grant Contract #:**

**Summary:**

Abel Chavez and Western have partnered with NREL to submit a grant for research and project development of alternative fuels in the region. Gunnison County may support with in-kind staff time and access to fleet and data. A letter of support is included for board signature along with the

**Fiscal Impact:** none

**Submitted by:** John Cattles **Submitter's Email Address:** jcattles@gunnisoncounty.org

**Finance Review:** ○ Required ◉ Not Required

Comments:

Reviewed by: Discharge Date:

**County Attorney Review:** ◉ Required ○ Not Required

Comments:
ok db 5/31/19

Reveiwed by: GUNCOUNTY1\dBaumgarten Discharge Date: 5/31/2019 Certificate of Insurance Required

Yes ○ No ◉

**County Manager Review:**

Comments:

Reveiwed by: GUNCOUNTY1\mbirnie Discharge Date: 6/3/2019

◉ Consent Agenda ○ Regular Agenda ○ Worksession Time Allotted: 0

Agenda Date: 6/18/2019

*Revised April 2015*

# Cover Page

**Project Title: Surface Transportation Fuel Technologies: Innovations for High-Altitude, Cold Climate, Rural Communities**

A Concept Paper in response to

**AOI 6b: New Mobility Services in Rural America**


**Submitted by:**
Western Colorado University (Prime)
National Renewable Energy Laboratory
Colorado Energy Office
Colorado Department of Transportation
The Gunnison Valley Rural Transportation Planning Region
The San Luis Valley Rural Transportation Planning Region

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# Concept Paper for Surface Transportation Fuel Technologies: Innovations for High-Altitude, Cold Climate, Rural Communities

Colorado's Western Slope (CWS) is defined by the 18-county region covering the West of the state. CWS is known for its diverse economy, outdoors, landscapes, and, its challenging, underfunded and often overutilized rural infrastructure. Like many rural communities in the United States (US), CWS' communities have vast natural and human resources, large inequities, crumbling infrastructure, and a highly motivated institutional base to materialize change in region's mobility systems. Yet today are in a unique position in a state that has set an executive order of targeting 100% renewable electricity, and nearly one million electric vehicles.

Colorado's Highway 50 (Hwy 50) is synonymous with CWS. Hwy 50 effectively connects both of the state's interstate highways, Interstate 70 (I-70) in Grand Junction (Mesa County) with Interstate 25 (I-25) in Pueblo (Pueblo County) over a 300-mile stretch. Hwy 50 is the economic catalyst for thousands of jobs directly linked with community livelihoods. This same corridor is also primed for innovative designs that directly impact its people, while driving regional prosperity, with vast opportunities to enhance efficiency of mobility and energy. As a result, this project team, comprised of Western Colorado University (Western), the National Renewable Energy Laboratory (NREL), the Colorado Energy Office (CEO), and the Colorado Department of Transportation (CDOT), will partner with clean cities coalitions, municipal and county partners along the Hwy 50 corridor to advance and accelerate the suite of transportation mobility services in this rural region of America. This team aims to explore key benefits from new mobility technology and services integration using novel data-driven frameworks to address the following core questions: ***Which surface transportation fuel technologies are most appropriate for high-altitude, cold climate, rural communities to help enable efficient, affordable movement of people, goods and services? And, how will new energy efficient mobility technologies enable rural communities to prosper and develop?***

**Proposed technology integration.** The project team will partner with the municipal, transit, utility, and county leaders along the Hwy 50 corridor to advance and accelerate a five-year transportation electrification roadmap for rural to urban (focus: small city) settlements. This will be initiated by PI Chávez, with regional mobility service providers, and harnessing the technological curiosity and new opportunities in surface transportation, energy, and workforce (re)development for the region. Considering the many challenges of the region, including the struggle to provide high-quality jobs, to energy-efficient and affordable mobility services (including to older adults), this project team will enable new technology demonstrations that explore the effectiveness and replicability of data-driven analytical methods that can enable regional strategies to catalyze a Hwy 50 innovation corridor as a rural testbed for new rural mobility services, and to incubate and innovate scalable energy innovation solutions. More specifically, solutions will be deployed that benefit people, drive prosperity, benefit the environment and create equity. To help address some of the real workforce needs facing many rural communities, the project team will also adopt High-Impact Education Practices (HIPs), namely those associated with community-based learning for university students, which have been proved to generate real student and community coupled outcomes in solving pressing challenges.

Building on the successful deployment of the first compressed natural gas (CNG) filling station in the region, this proposal will focus on high-mileage vehicle electrification, new first-last mile services, and on-demand (para)transit to healthcare, jobs, groceries, community centers, and waste hauling. Today, DOE can help the region take monumental and timely leaps that will significantly and directly benefit the region and beyond. To have a better understanding of linkages among driving, ride sharing and future rural micro-transit, we propose three overarching tasks to further enable rural mobility services across Western Colorado and beyond.

**Task 1:** Review rural to small city opportunities in high-altitude, cold climate environments for deploying new energy efficient mobility services, including EVs, CNG, shared mobility, and micro-transit.

While there is a real and immediate need and desire for energy efficient mobility services throughout the proposed region of study, only one such service is currently deployed – the Rural Transportation District (RTA). RTA operates between Gunnison-Crested Butte – a system originally conceptualized by a Western senior capstone project in 2012. Since its launch, RTA has operated diesel-powered buses until a grant from the CEO funded Gunnison's CNG filling station, enabling today's CNG powered RTA busses. But this is one, of several desired services, which DOE funding can assist realize. For this task the project team will convene clean cities coalitions, rural transportation planning regions, municipal and county partners along the Hwy 50 corridor for a multi-day workshop at Western to explore the array of fuel technologies most appropriate for high-altitude, cold climate, rural communities to help enable efficient, affordable movement of people, goods and services. The workshop will culminate in a set of team, partner, and community oriented tasks and next steps to advance regional deployment.

**Task 2:** Develop demonstration projects of data-driven analysis frameworks for energy efficient regional networks that enhance rural mobility, mobility energy productivity, and job creation.

As described above, Task 1 will culminate in a set of clearly defined tasks and next steps for rural transportation services most appropriate for the Hwy 50 region. The project team expects that key workshop products will include a group co-selected five fuel technologies to be deployed and tested across five distinct communities and services. In identifying which communities are assigned specific fuel technologies, the project team and partners will develop the TTAM (Transportation Technologies Assessment Matrix), which among its variables will include a baseline assessment of current infrastructure limitations or strengths for each community and an array of key metrics. Once identified, the team and partners will move to deploy the five technologies in five communities across the region. The rich data collection for each technology in each community may include categories such as: service type (e.g., movement of good or service), operation (e.g., maintenance cost and frequency, downtime), efficiency (e.g., fuel use and energy use), transit use (e.g., vehicle miles traveled, and time).

**Task 3:** Evaluate and optimize strategies to improve efficiency across regional corridor case studies: Pueblo-Salida, Gunnison-Crested Butte, and Montrose-Delta/Grand Junction.

Selecting distinct corridors in the region will assist the project team assess the effects that parameters such as climate, weather, altitude changes, ambient conditions, and driving patterns

have on various vehicles, technologies, and degrees of service. We expect these findings to reveal valuable data to allow the DOE to assist other transportation operators develop optimization strategies to improve transportation efficiencies. Thus, building on the products of Tasks 1 & 2, the project team with partners will re-convene post-trial period to evaluate the technologies deployed and to collectively analyze strategies for optimization. Emerging from this task will include a technology and policy white paper(s) for the State of Colorado as well as a series of peer-reviewed articles for global dissemination and inquiry.

Tasks 1-3 will be completed 36 months after project initiation. We anticipate the 50% cost share will come from the project team, rural transportation planning regions, municipal and county partners. This funding would support researchers from Western and NREL, facilitate collaboration among partners, fund a first of its kind regional-scale workshop, and broaden emerging technology impacts in enabling upgrades to efficient and affordable rural mobility services.

**Current state-of-the-art in the field and application.** In terms of transportation fuel technology adoption, the Hwy 50 corridor conforms with national averages. The Energy Information Administration reports that of the 28,394 Trillion BTU used in surface transportation nationally, 91.6% are from traditional sources (gasoline or diesel). In the proposed work, we ask how can the Hwy 50 corridor disrupt current infrastructural and institutional norms to create a series of pathways towards an energy and technological transition that is forward thinking, disrupts today's realities, challenges infrastructure and institutional barriers to lead this rural region's to becoming a testbed for innovation for the entire nation and the world.

**Potential impact.** Successful execution of this effort will have several positive impacts. For the Hwy 50 corridor, the proposed effort will stimulate economic growth, energy development, and innovation in an economically disadvantaged region eager to showcase its leadership. For the U.S. and the world, our findings will directly inform and advance the transportation science for other high-altitude, cold-climate, rural communities.

**Skill and expertise to successfully execute the project plan.**

Western team: Dr. Abel A. Chávez is Professor of Environment and Sustainability, and founder of Community Solutions Incubation+Innovation (CS2I) Lab, which has partnered with municipal and county partners across the proposed study area to help address infrastructure, community development, and sustainability efforts. His expertise in the region and in the subject matter will be an asset to a successful execution.

NREL team: Dr. Andy Duvall is a transportation behavior researcher, and Dr. Josh Sperling is a sustainable infrastructure systems engineer and interdisciplinary researcher. They both lead projects in the DOE SMART Mobility Lab Consortium that combine engineering, planning, policy, and behavioral science approaches.

In this project, the WCU-NREL team, led by PI Chávez will work closely with deployment partners including rural transportation planning regions, municipal and county partners to help meet emerging needs of energy efficiency improvements, and facilitate planning and decisions.

Gunnison County Board of County Commissioners

U.S. Department of Energy (DOE)
Office of Energy Efficiency and Renewable Energy (EERE)
FOA Number: DE-FOA-0002014
AOI 6b: New Mobility Services in Rural America
Control Number: 2014-1921

Dear Dr. Chávez and U.S. DOE Reviewers:
Gunnison County is pleased to support the enclosed grant proposal from Western Colorado University titled **Surface Transportation Fuel Technologies: Innovations for High-Altitude, Cold Climate, Rural Communities** under the DOE's EERE Funding Opportunity Announcement (FOA) Number: DE-FOA-0002014. Gunnison County has a history of partnering with Western and Dr. Chávez; we expect the proposed effort will yield substantial benefits towards building a vibrant economy across our rural region in Colorado. We too are committed to this effort. Gunnison County has already begun switching our fleet to alternative fuel vehicles utilizing CNG and have supported the development of a CNG station for public use which has been in place since 2017. Gunnison County is committed to continuing to pursue alternative fuels that lower GHG emission. Our CNG project has allowed us to lower our fleet related emissions, fix our fuel cost for 10 years, and lower our fuel expenditure. Through our efforts we have identified an opportunity to utilize renewable natural gas to further lower emissions and reduce landfilled waste. There may also be an opportunity to utilize beetle kill trees to produce renewable fuel. These projects would provide economic opportunity to our citizens and align with our environmental stewardship goals. Gunnison County is particularly interested in how this funding may spur economic activity and project development of renewable transportation fuels in the region.
Gunnsion County is willing to commit our alternative fuel fleet vehicles and data as in-kind matching funds for this effort. Staff time is also available as appropriate and in alignment with our goals and interests.
Questions or concerns may be addressed to:
John Cattles
Sustainable Operations Director
jcattles@gunnisoncounty.org
970-641-8562

Thank you for your consideration of this vital and timely application.

Matthew Birnie
County Manager
Gunnison County Colorado