ACCELERATING ALTERNATIVE FUEL ADOPTIONS IN MID-AMERICA

Kansas City Regional Clean Cities

2019 DOE VEHICLE TECHNOLOGIES OFFICE
Annual Merit Review and Peer Evaluation Meeting

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Metropolitan ENERGY CENTER

Kelly Gilbert, Principal Investigator
Metropolitan Energy Center

Project ID: TI089

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Kansas City Regional Clean Cities

Metropolitan ENERGY CENTER

Transforming energy use in America's Heartland since 1983

Mission

To create resource efficiency, environmental health and economic vitality in mid-America.

Programs

- Alternative Fuels and Clean Transportation
  - Central Kansas Clean Cities Coalition
  - Kansas City Regional Clean Cities Coalition
- Energy Efficiency in Buildings

Overview

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Timeline

- Start: October 2018
- End: March 2021
- 12.5% complete

Reducing Market Barriers

- Support Pioneering Deployments
- Provide Best Practices to Potential End-Users

Budget: $7,630,417

- DOE: $3,803,793
- Local: $3,826,624
- BP1: $2,417,473
  - Spent: $952,810 (as of 3/31/2019)
- BP2: $2,632,303
- BP3: $2,580,641

Partners

- City of Kansas City MO
- City of Garden City KS
- City of El Dorado KS
- Kansas City Airport
- Blue Springs School District
- Grain Valley School District
- 24/7 Travel Stores
- Sparq Natural Gas
- Stirk CNG

Project Objectives

Kansas City Regional Clean Cities

Improve AFV Corridors

I-49: Stirk CNG at Sapp Bros., Harrisonville, MO

I-70: CNG at Salina, KS, truck stop

I-70: CNG at WaKeeney or Goodland, KS, truck stop

I-35: City of El Dorado public CNG fueling, El Dorado, KS

Increase Alt Fuel Fleet Deployments

Propane Fueling, Grain Valley MO R-5 Schools

Biodiesel Blending, University of Kansas Biodiesel Initiative

5 CNG refuse trucks, City of Garden City, KS

10 HD CNG Trucks, City of El Dorado, KS

10 EV sedans and 26 HD CNG Trucks, City of Kansas City, MO

10 EV Shuttle Buses and DCFC, Kansas City Missouri Aviation Dept

Time-Fill CNG, Blue Springs MO R-IV Schools

3 Class 8 CNG tractors: KALM Energy

Research and Reporting

Study cost efficiencies of building **H2 fueling** at CNG station sites

Best practice deployment guides: CNG in municipal work trucks; EV in shuttle fleets.

TI Program Goals

National Security (fuel diversity, domestic fuel sources, alt-fuels)
Affordability for Business and Consumers (cost savings from alternative fuels)
Reliability/Resiliency (diverse/resilient fueling and transportation options)

Approach

Kansas City Regional Clean Cities

Execute Community Workshops

Conduct community workshops to educate, promote alternative fuels, and generate new AFV projects.

Create a replicable grass-roots model to expand clean-fuel markets.

Procure and Deploy Alt Fuels

Expand infrastructure along key highways, closing the CNG fueling gap on I-70 between Denver and Kansas City, completing a leg of the AFV Corridor

Assist local communities in first-time alternative fuel adoption and in increasing current or transitioning to new alternative fuel use.

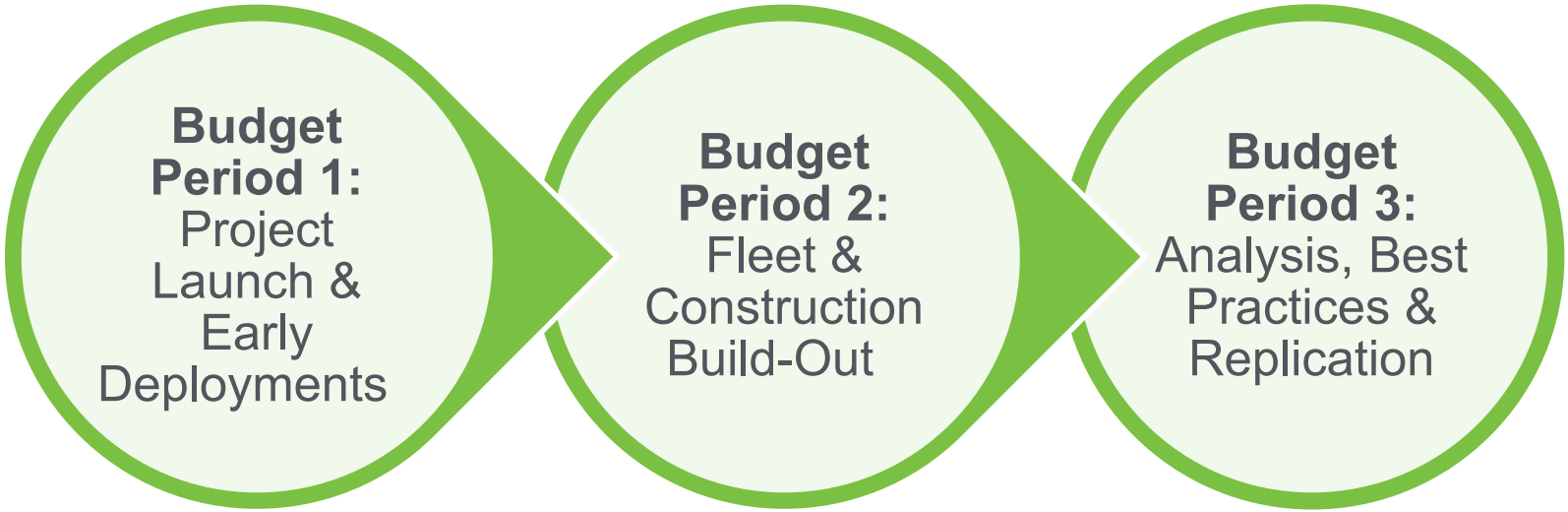
Share Data and Best Practices

Reductions in GHG emissions by Year Three: 3,377 Metric Tons

Reductions in petroleum use by Year Three: 43,675 Barrels

Fuel cost savings by Year Three: $888,615

Approach



- Prepare Community Outreach and Engagement
- *Activity: Create Media Packet*
- *Activity: Host Community Workshops*
- Begin Infrastructure Development
- Begin Vehicle Procurement

- Infrastructure Development (continued)
- Vehicle Procurement (continued)
- Community Outreach and Engagement – Execution
- Hydrogen Infrastructure Integration Study

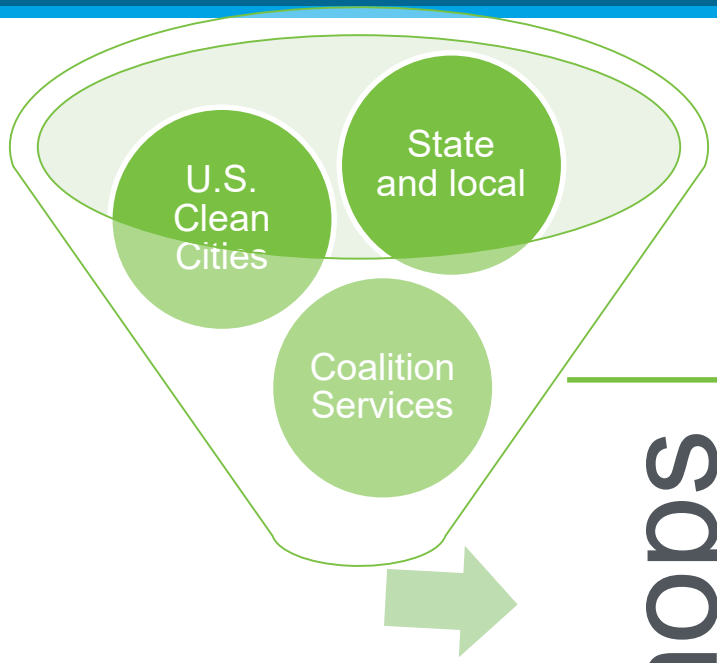
- Infrastructure Development (continued)
- Vehicle Procurement (continued)
- Community Outreach and Engagement – Execution (continued)
- Data Management and Analysis

Milestones

	Budget Period 1 (Oct 2017 – Mar 2019)		
Project Launch & Early Deployments	Complete	Subrecipient Contracts 75% Executed	Go - No Go
	Complete	Project Kick-Off Meeting	Admin
	Complete	Revised DMP Sent to DOE for Approval	Admin
	Complete	Communication Plan Complete	Admin
	Complete	Community Workshops 30% Complete	Technical
	Complete	First Fueling Infrastructure Project Operational	Technical
	Complete	First AFV Deployed	Technical

	(Budget Period 2) (Apr 2019 – Mar 2020)		
Fleet & Construction Build-Out	In Progress	Infrastructure Contracts 50% Executed	Technical
	In Progress	Infrastructure Projects 50% Complete	Technical
	In Progress	Purchase Orders 50% Issued	Technical
	In Progress	AFVs 40% Purchased and In Service	Technical
	Not Started	Best Practices, Deployment Guide 50% Prepared	Technical
	In Progress	Community Workshops 90% Complete	Technical
	100% procurements done; stranded funds re-allocated		Go – No Go

Accomplishments and Progress



workshops

- Kansas City MO (Electric Sedans)
- Wakeeney KS (public and municipal CNG)
- Garden City KS (public and municipal CNG)
- Grain Valley Schools (propane buses)

The Garden City workshop resulted in a new AFV project at nearby Dodge City. Dodge is home to a renewable natural gas facility, and the city is now planning to deploy its first CNG truck. The KCMO workshop generated a new EV program for City of Olathe, KS.

Accomplishments and Progress

Kansas City Regional Clean Cities

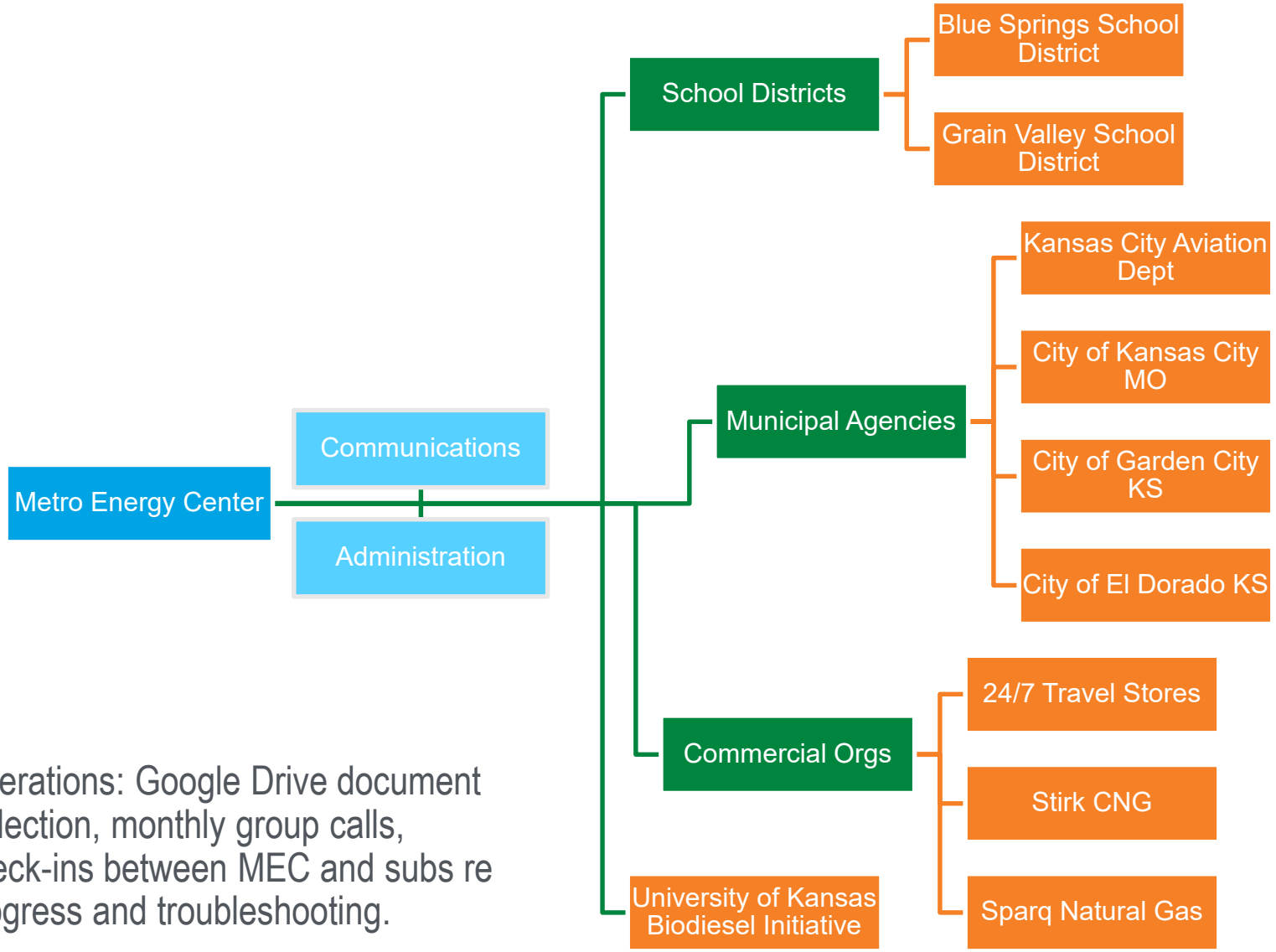
Early electric infrastructure installation at KCMO Aviation Division. All the airport shuttles run on either CNG or electricity.

Accomplishments and Progress

Kansas City Regional Clean Cities

Early propane infrastructure installation at Grain Valley Schools. Their more recent workshop compared costs and benefits of propane buses and fueling vs diesel and CNG.

Collaboration and Coordination



Operations: Google Drive document collection, monthly group calls, check-ins between MEC and subs re progress and troubleshooting.

Overall Impact

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Energy Security and Petroleum Displacement

- By the end of the project period, subrecipient projects will have reduced use of petroleum by 43,675 Barrels, with a projected annual reduction of nearly 21,000 barrels throughout the lifetime of project deployments.

Sustained activities beyond the period of performance

- Fuel cost savings by project end of nearly $900,000 will keep fleet-based projects going.
- Stakeholder beneficiaries will become spokespersons to their peers.
- Completing key CNG stations along travel corridors will more easily enable goods movement travel using CNG in Class 8 tractors for freight.

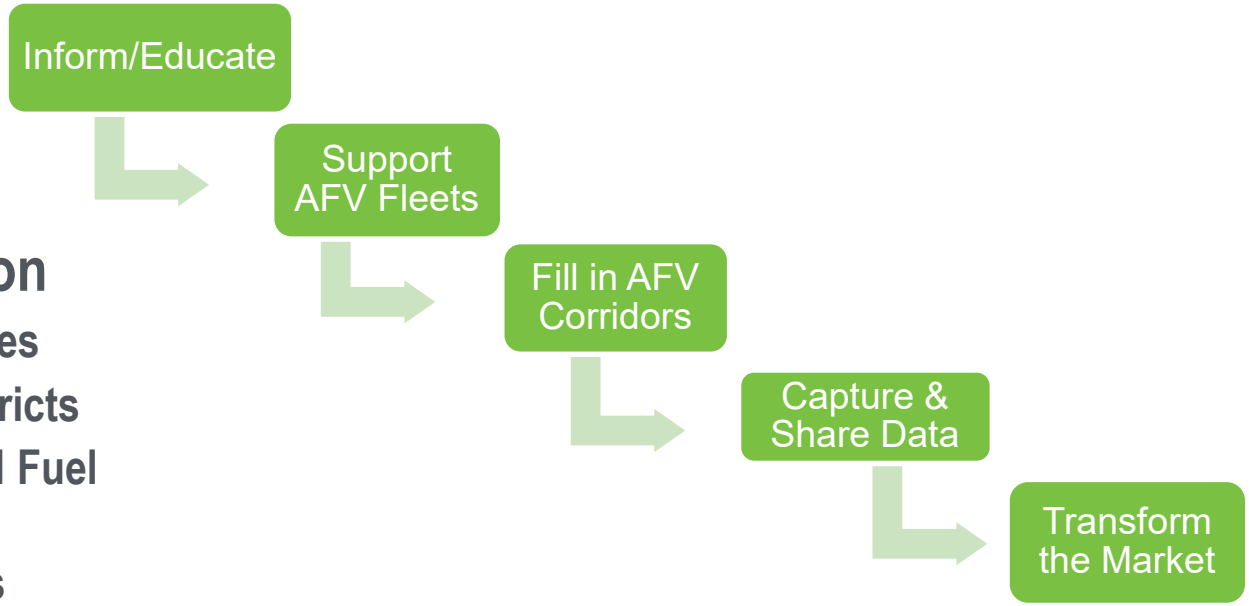
Project replicability

- Best Practice Deployment Guides will be useful to fleets across the U.S. through Clean Cities channels.
- Hydrogen study will inform future work

Any proposed future work is subject to change based on funding levels.

Summary

Objective



Collaboration

- Municipalities
- School Districts
- Commercial Fuel Retailers
- Clean Cities
- Universities

Project Sustainability

- Generating Best Practice Deployment Guides
- Establishing functional goods movement corridors
- Creating AFV spokespeople for the regional market