



Colorado
Energy Office



Natural Gas Vehicles – Market Implementation Plan

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September 13, 2013



Vision



JOBS



SECURITY



COST



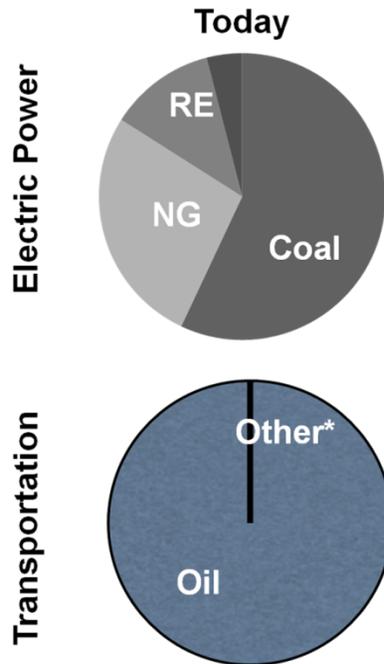
ENVIRONMENT

The Colorado Energy Office promotes sustainable economic development in Colorado through advancing the state's energy market and industry to create jobs, increase energy security, lower long term consumer costs, and protect our environment.



Like the Nation, Colorado is Dependent on Oil

Colorado's Current Energy Mix



Balancing Colorado's Transportation Energy Mix

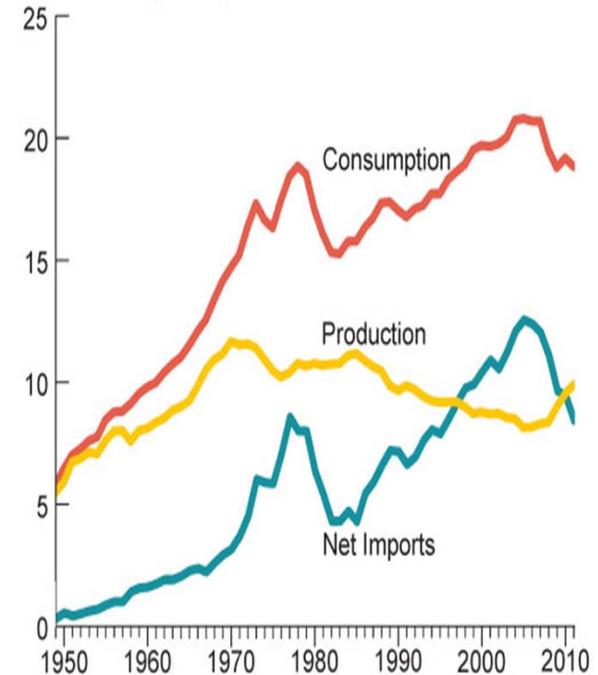
CEO seeks to diversify Colorado's transportation fuel mix by helping the right consumers (fleet and individual) find the right energy solutions

Benefits

Energy security, lower consumer costs, improved environmental performance, and Colorado jobs

U.S. Petroleum and Other Liquids, Consumption, Production, and Imports (1949-2011)

million barrels per day



Source: U.S. Energy Information Administration, *Monthly Energy Review*, Table 3.1 (April 2012), preliminary data, and *Annual Energy Review*, Table 5.1a (October 2011).



NGV Market Implementation Plan

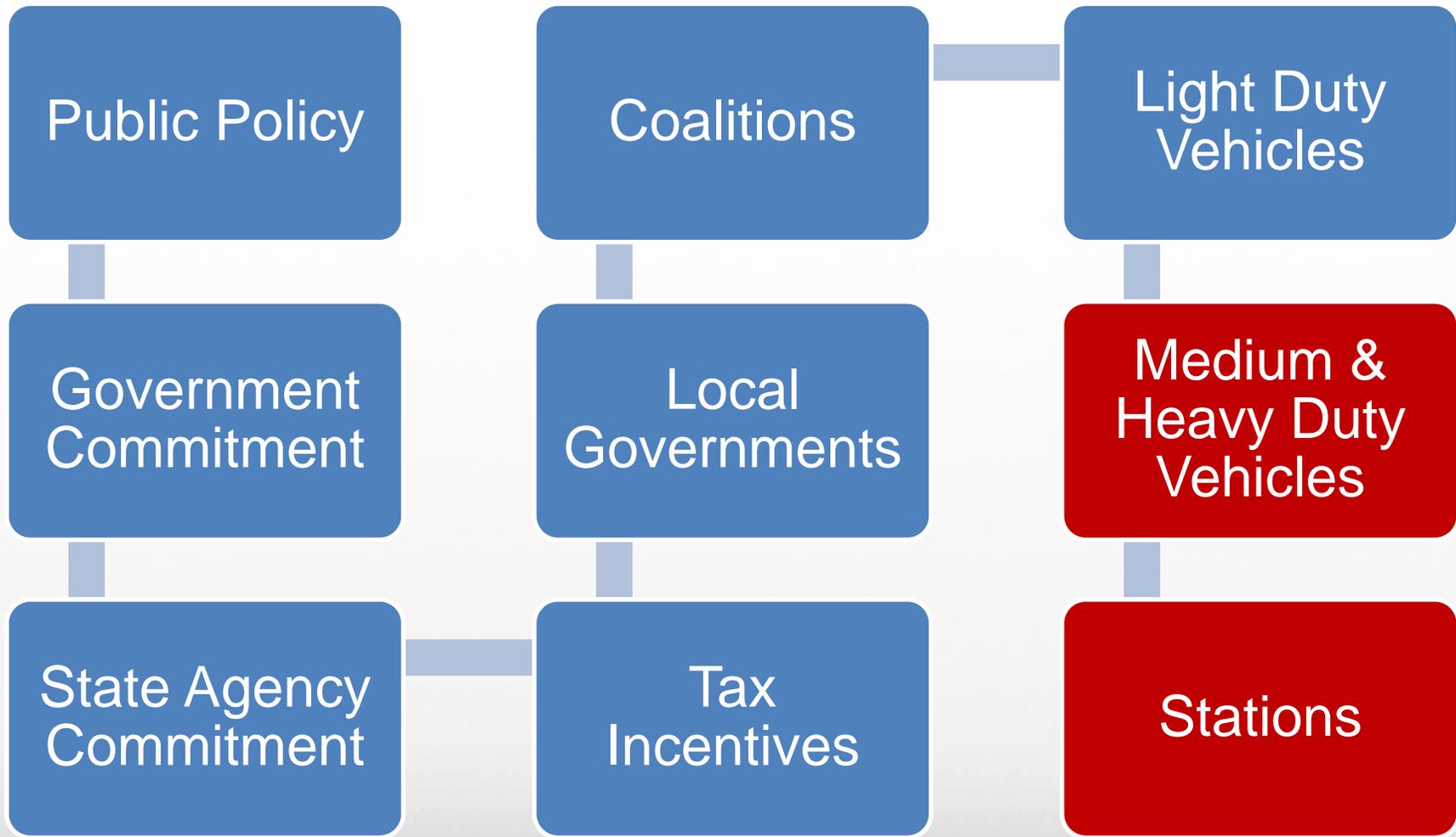
How do we get a sustainable market?

Medium and heavy-duty fleets are best sources of demand

Station corridors are essential

Build working relationships with communities, fleets, marketers, advocates, consumers, and others

NGV Implementation – What It Takes



Rationale for Stations

50-100 miles spacing on major corridors

- Experience from other states to provide confidence in fuel availability

50-100 vehicles support a station

- Vehicles in NAA will stimulate station demand

25-30 new stations total

- Approximately 10-15 in NAA, 10-15 elsewhere



Rationale for Vehicles

Medium and Heavy Duty Vehicles

- Approx. 96,000 MDVs and HDVs in Colorado
 - About 35,000 in 7 county-region
 - 58% are more than 8 years old

Lack of Incentives

- \$6,000 for LDVs or MDVs
- Great for LDVs with tax liability
- But low for MDVs and nonexistent for HDVs

Payback Period

- Greater GVWR means lower fuel economy
- HDVs often travel more miles

Vehicle Expectations

Over 1100 vehicles total, 60% MD/HD, 40% LD

- Can adjust based on market interest and LD demand from local gov'ts

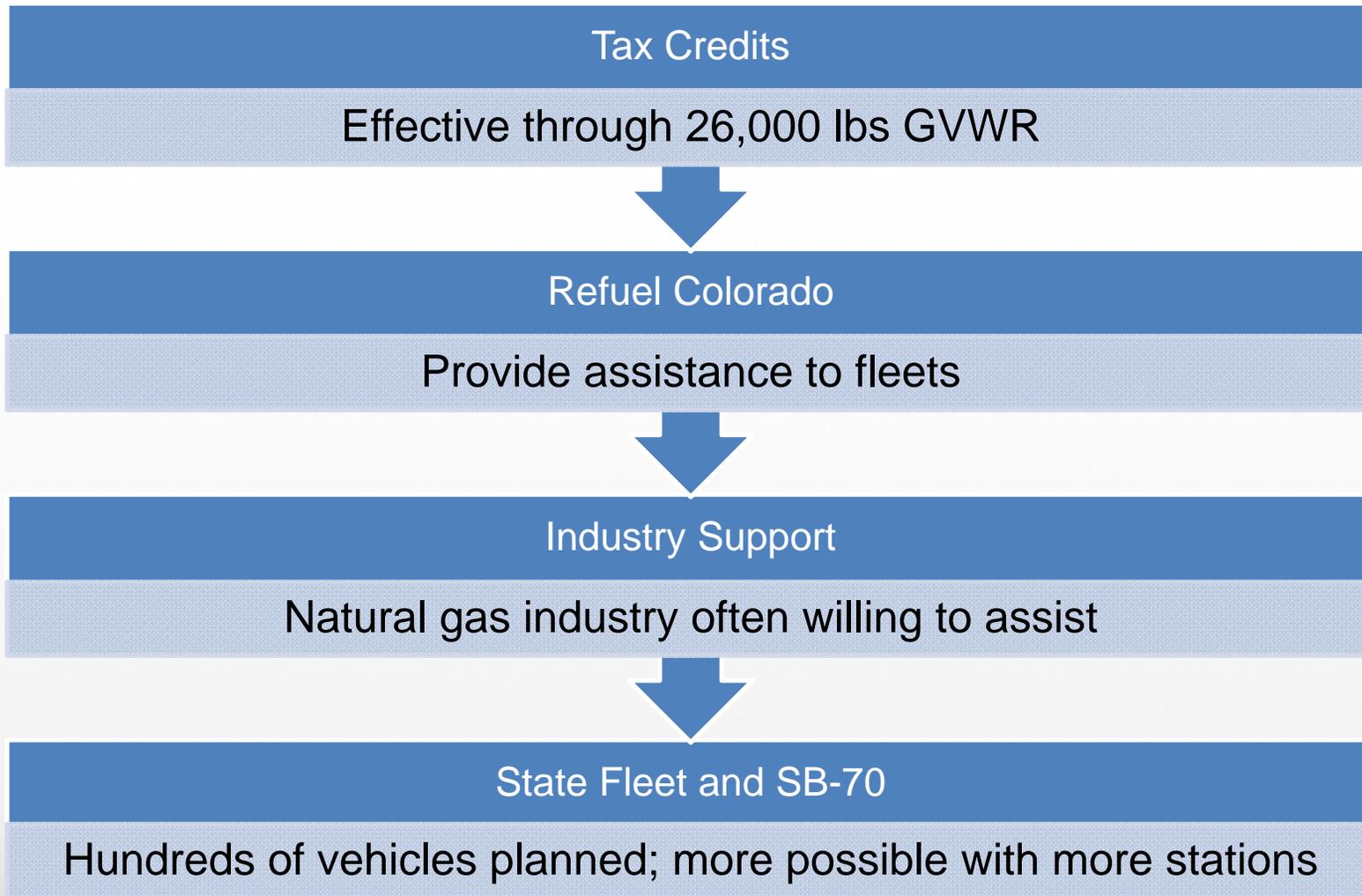
Biggest mileage from MD/HD

- Thus more emissions reduction; receives most funding due to size of incentive

Enough vehicle demand to support initial stations

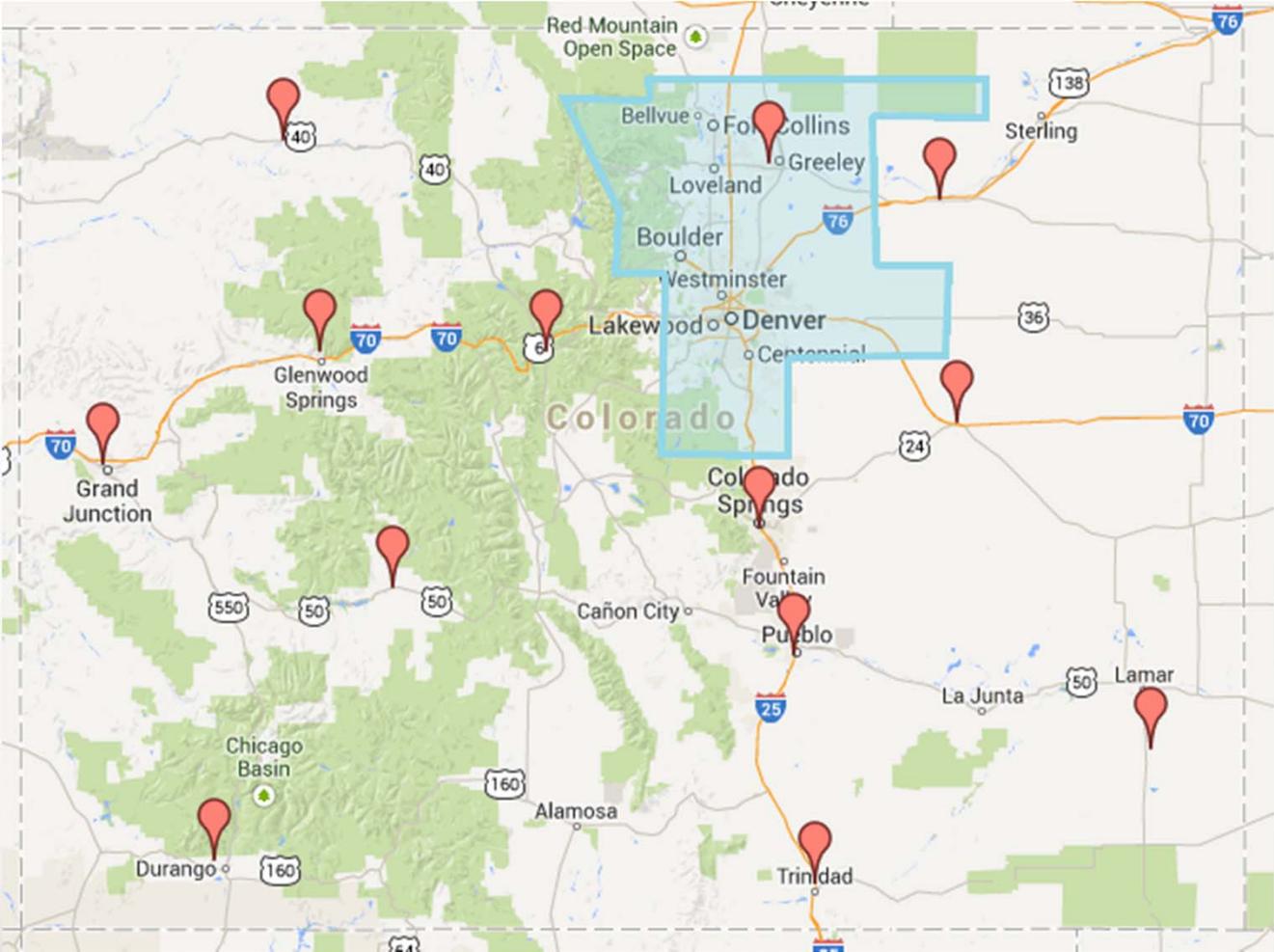
- Vehicle investment can continue based on economics

On-going Statewide Vehicle Efforts



Outreach and Interest

Interest from fleets in the non-attainment area, cities and counties, and state agencies. CEO sponsored Refuel Colorado Fleets working to help fleets adopt alternative fuels across the state.



Refuel Colorado

DOE Grant administered by CEO

Refuel Colorado Fleets portion works with local communities

- Run by Clean Energy Economy for the Region

Train and deploy Energy Coaches

- Routt, Larimer, Adams, Boulder, Jefferson, Grand, Mesa, Montezuma, and La Plata Counties

Help fleets with alternative fuel choices

Communities selected by coaches after soliciting interest

- CEO can provide direct aid to others interested



Natural Gas Vehicle Benefits

Environmental Benefits

- Light-duty vehicles show moderate GHG reduction (7%) and high NOx reductions (40%) when switching from gasoline
- VOC reductions of 75%
- No hard studies on HD data since increased emission standards & improved NGV engines
- However, 58% of Colorado MD and HD vehicles are older than 8 years – meaning that pre-2007 emissions standards will be the ones replaced
- Replacing older diesels with NGVs will reduce GHGs, relative to engine efficiency, and criteria pollutants by up to 20 g/mi for NOx

Emissions reductions from proposal

- Total from program, once ~1100 vehicles are implemented – 41,325 kg NOx annually, 6,960 kg VOC.
- Results from initial year (approximately 20% of vehicle funding) – 8,265 kg NOx annually, 1,390 kg VOC.
- Results of station build-out will also leverage long-term benefits of a sustainable market – potentially over 15 million kg of NOx and 2.5 million kg of VOC annually.

Assumptions – CNG reduction factors per mile from MOBIL6; annual VMT by vehicle class from DOE; long-term projections based on goals of a sustainable market (see slide 15)

CMAQ Funding Proposal

\$30M over four years; \$10M in first year with roughly even installments over following three years

CEO leads administration and station grants; vehicle grants handled by grant, with counties able to aggregate if interested

Initial year - \$7M to stations, \$3M to vehicles to jumpstart stations; latter years lean more towards vehicles

CMAQ Funding Proposal

Station Incentives Throughout State

Metro Area

- Over half of the state's existing stations
- Goal of 20 stations total in the NAA

Statewide Corridor

- Overcoming range anxiety is crucial to vehicle adoption
- Key station locations
- Goal of 50 stations statewide (including Denver Metro Area)
- 25-30 new CNG stations

Incentives

- Up to \$500,000 for natural gas fueling stations
- Phase incentives down as market dictates
- CEO will lead and coordinate effort



CMAQ Funding Proposal

Vehicle Incentives in Non-Attainment Area

Heavy Duty Vehicles

- Address absence of incentive for class with most demand/quickest payback
- 75% of incremental cost up to \$50k

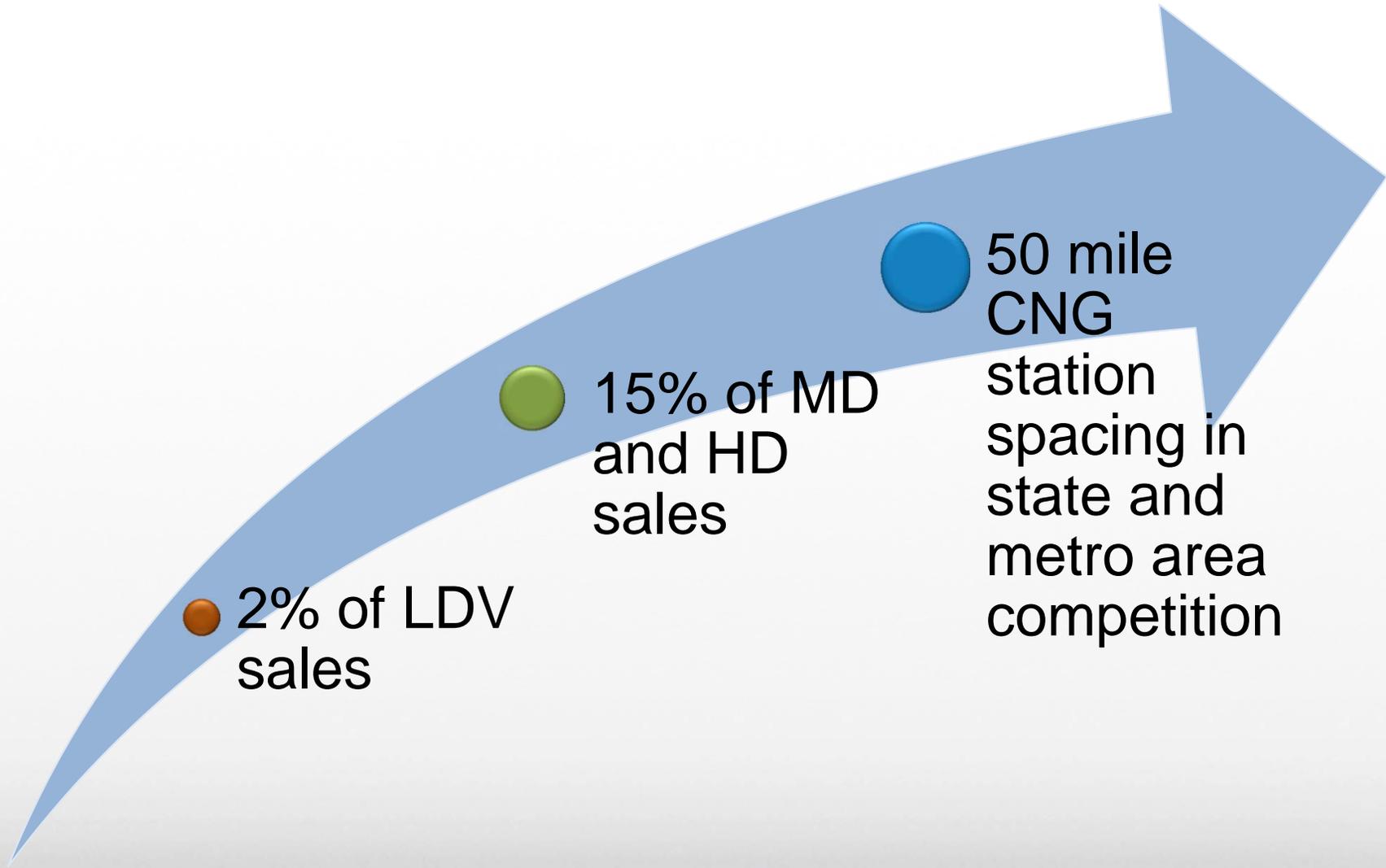
Medium Duty Vehicles

- Wide variety of duty cycles and vehicle sizes that could support station build-out
- 75% of incremental costs up to \$30k

Light Duty Vehicles

- Mimic tax credit for entities without eligibility
- Have seen significant interest from local governments and NGOs

What is a Sustainable Market?



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