



# Air Quality & Natural Gas Vehicles

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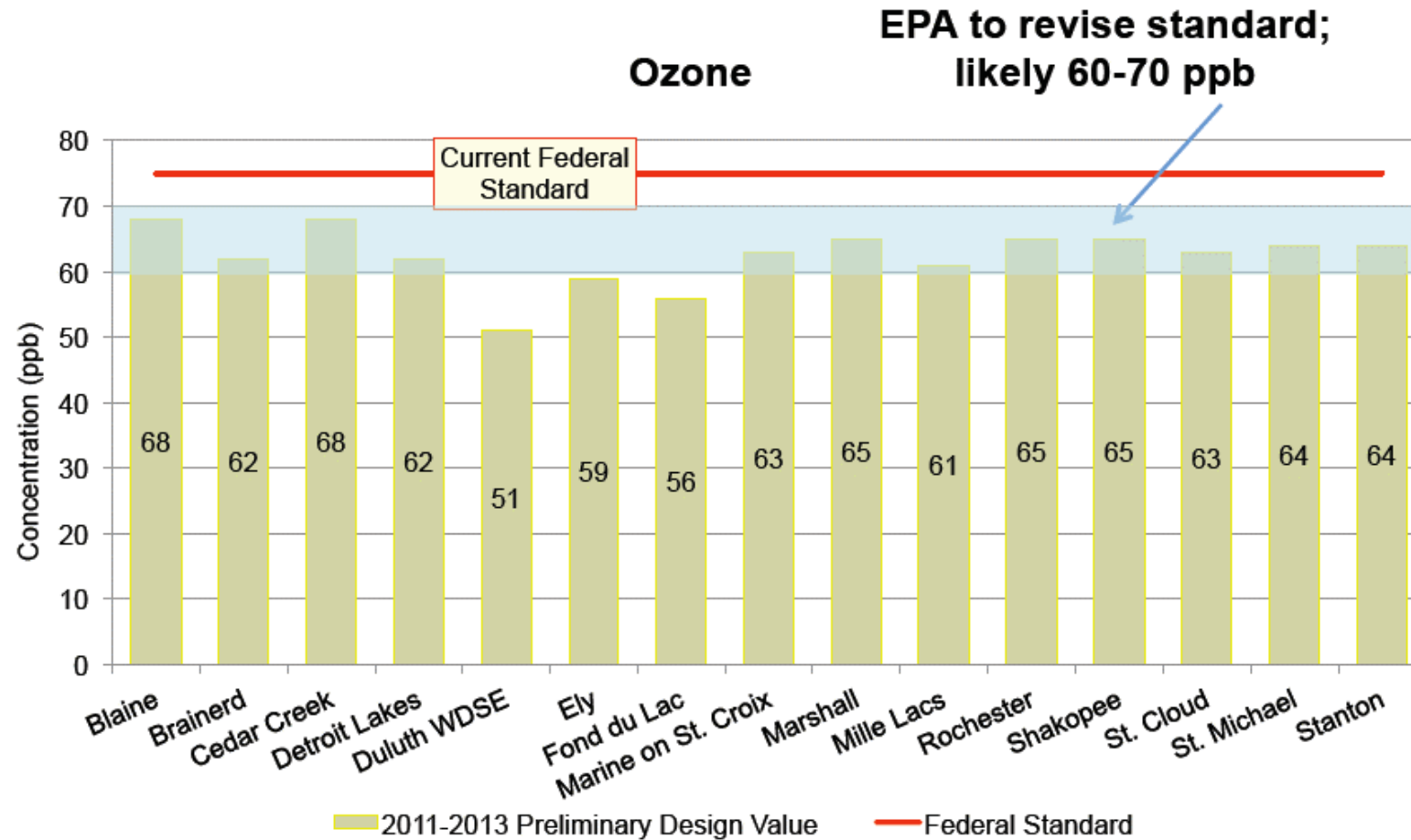
# Overview



- Minnesota's current air quality
- Tailpipe impact on air and health
- Benefits of natural gas vehicles
- Efforts in Minnesota to accelerate adoption

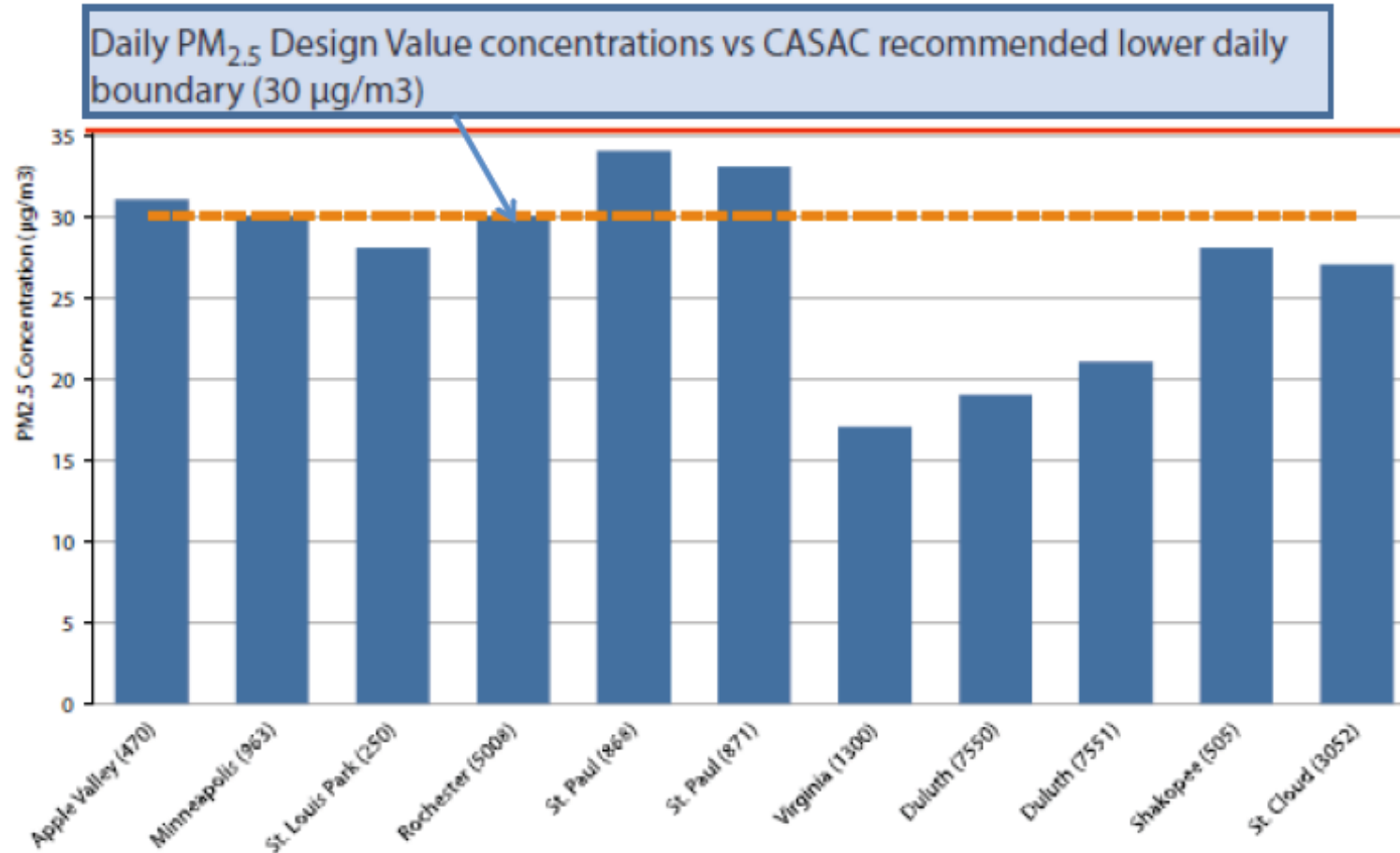


# Minnesota Air Quality - Ozone



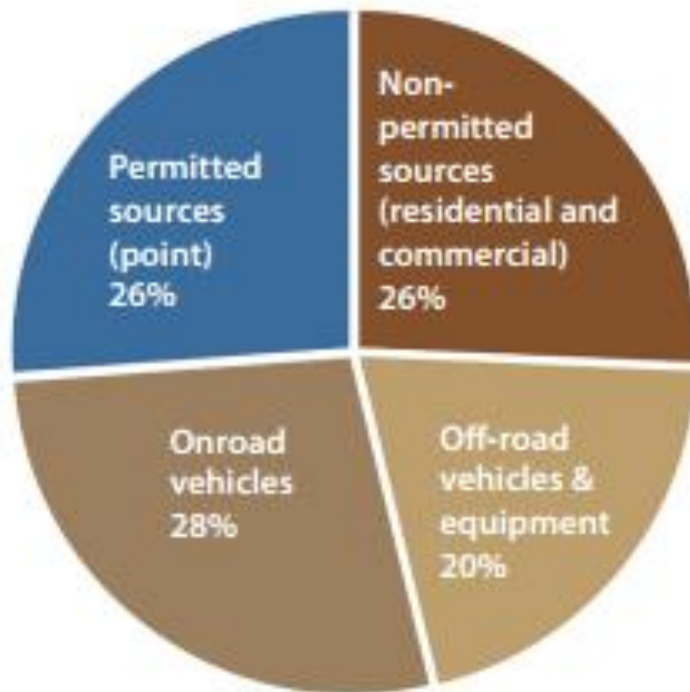
Source: Barr Engineering

# Minnesota Air Quality – Fine Particulate Matter



Source: Barr Engineering

# Vehicle Pollution in Minnesota



Point sources are becoming a smaller part of the air quality problems in Minnesota.

*MN 2008 Emissions Inventory: NO<sub>x</sub>, SO<sub>2</sub>, PM<sub>2.5</sub>, VOCs*

Source: MPCA

- Vehicles are Minnesota's largest source of pollutant emissions.
- As larger, regulated point sources of emissions are further reduced, vehicles become more important.
- To improve our air quality and health, tailpipe emissions must be reduced.

# Fighting for Air – Alternative Fuels in MN



- Minnesota has a nation-leading E85 retail infrastructure and more than 400,000 flex fuel vehicles.
- Minnesota's biodiesel standard is a national model.
- Electric vehicles growing.

# Clean Air Benefits of Natural Gas Vehicles



Credit: NREL

- Compared to vehicles powered by traditional petroleum fuels, CNG-fueled vehicles emit considerably less of the following major air pollutants:
  - Hydrocarbon
  - Carbon monoxide
  - Oxides of nitrogen
  - Greenhouse gases
- Fewer health concerns through reduced emissions.

# Natural Gas Vehicle Workgroup

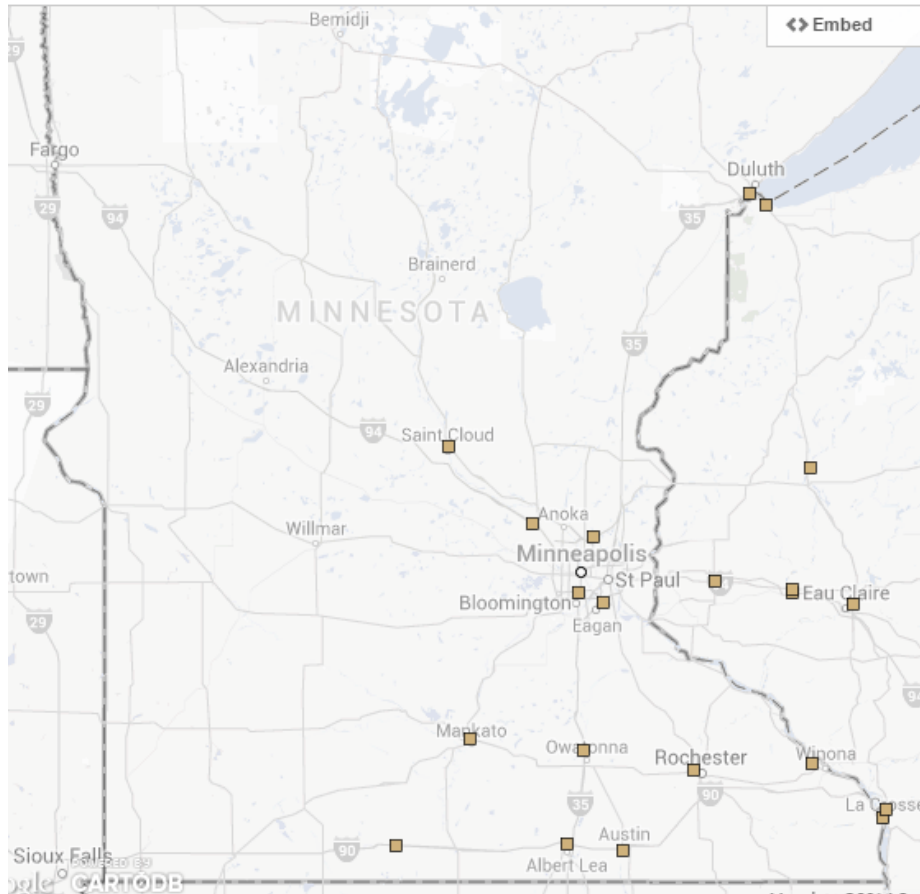


## Examples of workgroup partners:

- 3M
- CenterPoint Energy
- CHS
- City of Duluth
- City of Minneapolis
- Cummins
- DNR
- FirstCNG
- GE Fleet Services
- General Motors
- Holiday Stationstores
- Kenworth Truck Company
- Kwik Trip
- Minnesota Power
- Minnesota Trucking Association
- Peterbilt
- UMD
- Waste Management
- Xcel Energy



# Refueling Sites



## Public (shown)

- Albert Lea – Kwik Trip (coming soon)
- Austin – Kwik Trip (coming soon)
- Blaine – Clean N’ Green
- Duluth – Holiday Station
- Eagan – Kwik Trip
- Fairmont – CHS (opening today)
- Mankato – Kwik Trip
- Minneapolis – CenterPoint Energy
- Minnesota City – Kwik Trip
- Owatonna – Kwik Trip

- Rochester – Kwik Trip
- Saint Cloud – Metro Bus (public site in development)
- St. Michael – Kwik Trip

## Private (not shown)

- Bemidji
- Burnsville
- Dodge Center
- Saint Cloud
- Shakopee

# Who Is Using Natural Gas Vehicles?



## In Minnesota:

- Refuse Haulers
  - ACE, Waste Management, Randy's, Dick's
- Kwik Trip
- Dart/Anderson Windows
- Fastenal
- Rochester Shuttle Service
- Saint Cloud Bus Company

## Nationally (from NGV America):

- 1/5 of all transit buses CNG or LNG in 2011
- Fastest growing segment: waste collection and transfer vehicles;
- Airport fleets: third largest user

# Questions?

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