

# How to choose the best alternative for your fleet – FAST!



Indianapolis, Indiana

June 30, 2011



Linda Gaines and Andy Burnham

Argonne National Laboratory



# New seedlings can all be nurtured...



**but we must choose which to plant in each garden as they grow and compete**



# Clean Cities has nurtured many alternative fuels



- Now you must choose which to use in your fleets
- Many criteria are relevant
  - Vehicle and fuel availability
  - Costs
  - Petroleum reduction
- AFDC and others have tools to help, but
  - Not integrated
  - Additional information is needed

## Tools

On this page you can access the complete collection of tools, database searches, calculators, and interactive maps available on the Alternative Fuels and Advanced Vehicles Data Center. For [mobile tools](#), go to [www.eere.energy.gov/m/cc](http://www.eere.energy.gov/m/cc) on your mobile device.

## Fuels and Stations



**Alternative Fueling Station Locator** ▶  
Find alternative fueling station locations.



**TransAtlas** ▶  
Explore an interactive map displaying alternative fuel and vehicle data.



**Stations Custom Query** ▶  
Search the U.S. alternative fueling station database.



**BioFuels Atlas** ▶  
Compare feedstocks and analyze biofuel production by location in this interactive map.



**Total Stations Count** ▶  
Find the number of fueling stations in the U.S. by fuel type.



**Fuel Properties Search** ▶  
Create custom charts comparing fuel properties.

## Vehicles



**Light-Duty Vehicle Search** ▶  
Find and compare light-duty alternative fuel vehicles.



**NGV Natural Gas Vehicle Cost Calculator** ▶  
Compare costs of NG vehicles to conventional vehicles.



**Heavy-Duty Vehicle Search** ▶  
Find and compare alternative fuel heavy-duty vehicles, engines, or hybrid propulsion systems



**FLEX Flexible Fuel Calculator** ▶  
Compare costs of FFVs to conventional vehicles.

## Fuel Economy



**Truck Stop Electrification Locator** ▶  
Find TSE site locations.



**FuelEconomy.gov** ▶  
Find and compare a vehicle's fuel economy rating, emissions, performance, and more.

## Fleets



**Fleet Experiences Search** ▶  
Browse fleet experience stories by category.

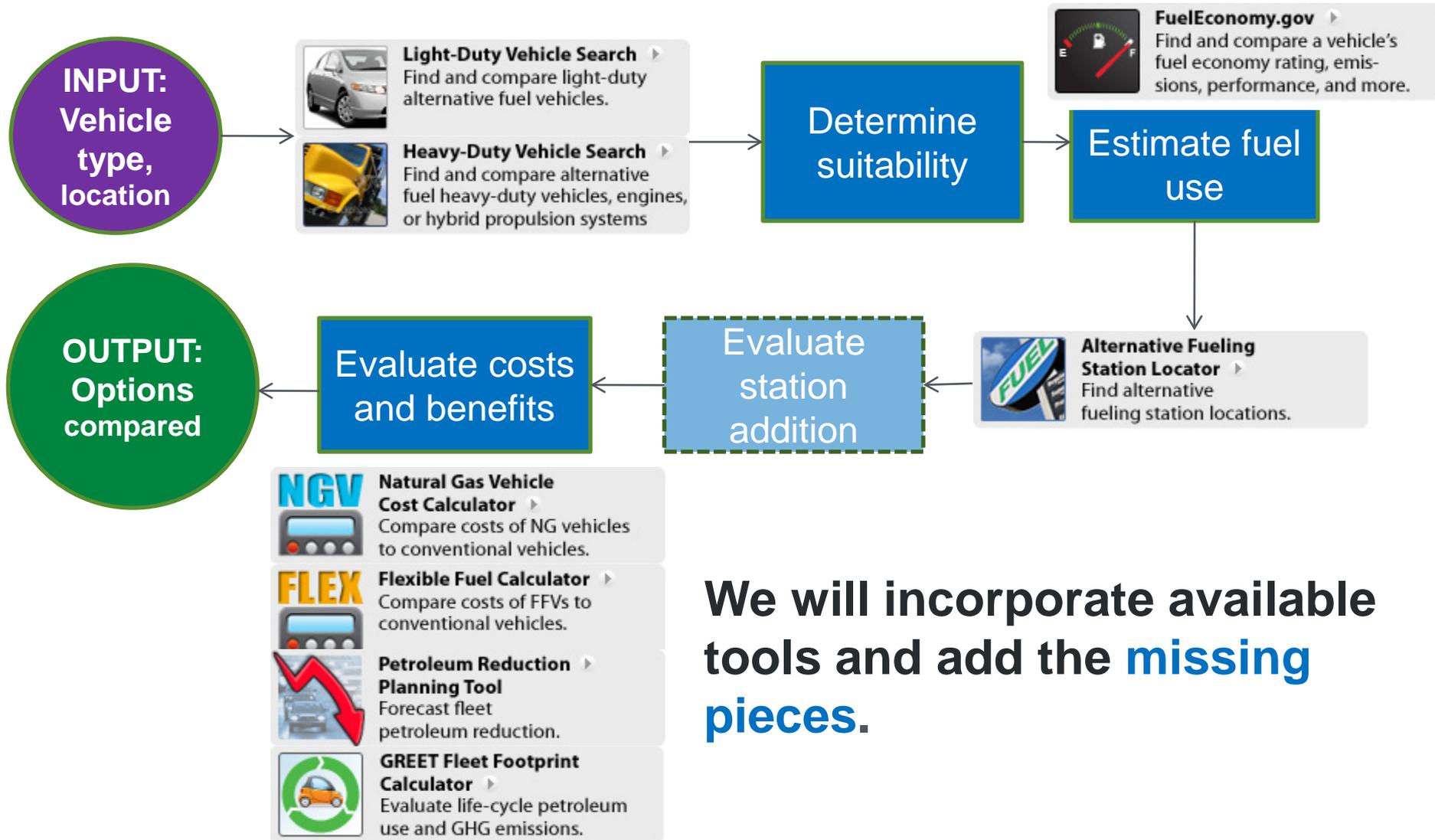


**GREET Fleet Footprint Calculator** ▶  
Evaluate life-cycle petroleum use and GHG emissions.



**Petroleum Reduction Planning Tool** ▶  
Forecast fleet petroleum reduction.

# Argonne is designing an integrated tool

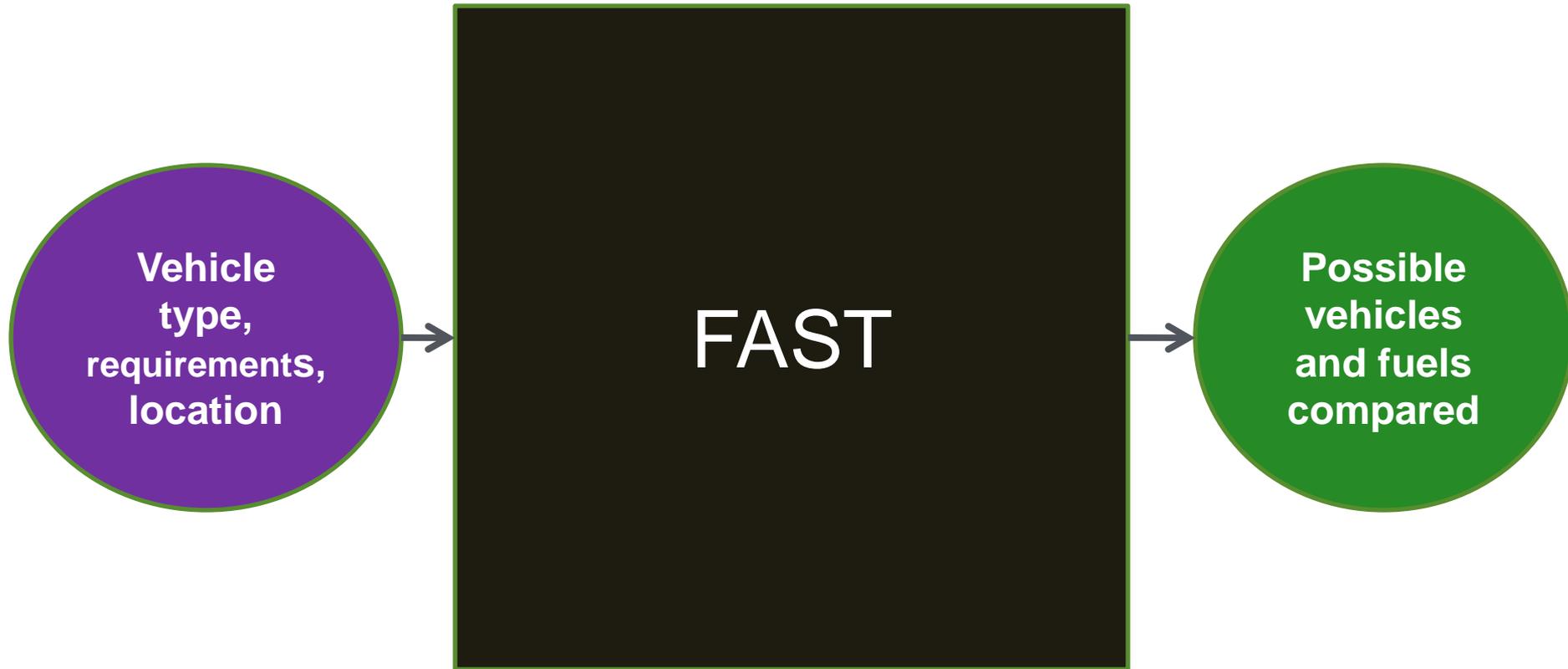


We will incorporate available tools and add the **missing pieces.**

# FAST: Fleet Alternative Selection Tool



The user provides one set of inputs to get options compared



# Key inputs and outputs include



## User inputs:

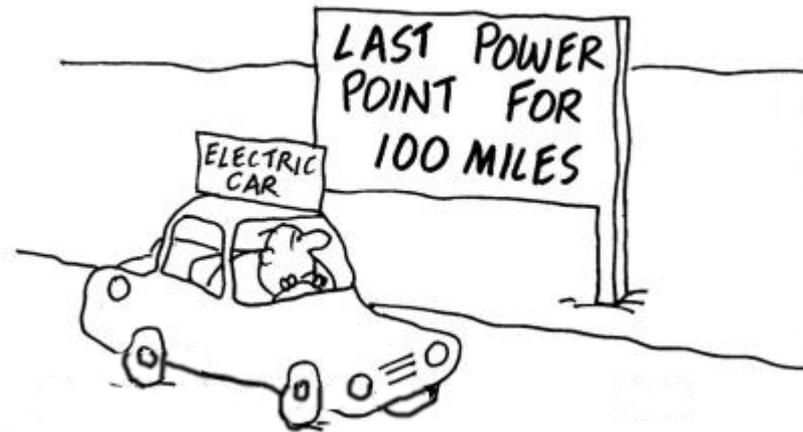
- Vehicle type needed, including special requirements
- Fuel economy of conventional counterpart
- Annual miles
- Location
- Maximum acceptable distance to travel for fuel

## Outputs:

- Available options for alternative vehicles and fuels
- For each available option:
  - Petroleum and greenhouse gas reduction
  - Fuel cost savings
  - Suitability to vocation

# Determining vehicle suitability is crucial

- **Wrong choice can be costly and retard progress**
- **Parametrizing suitability is difficult**
  - **Weight class**
  - **Engine size**
  - **Torque**
  - **Range**
  - **Special requirements**



**Electric vehicle may not be best choice for long-distance applications**

# An example illustrates the steps to be included

Suppose I want to buy **5 small school buses**

1. Use the HD Vehicle Search and find 2 options:

– Collins Bus Corp. - NexBus Gasoline Hybrid

- **Fuel Type Option:** Gasoline/Electric
- **Vehicle Class:** 4 (14,001 - 16,000 lbs)
- **Number of Passengers:** 20

– Collins Bus Corp. - NexBus Propane

- **Fuel Type Option:** Propane
- **Vehicle Class:** 3 (10,001 - 14,000 lbs)
- **Number of Passengers:** 14 – 30



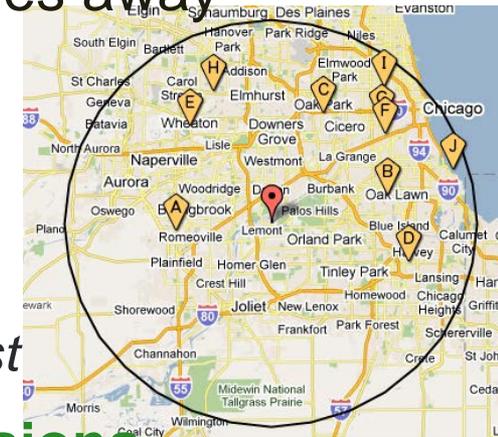
2. Use **annual miles** and estimated mpgge (from GREET Fleet) to determine fuel volume for both of the options

Key: **Input**; *Process to be added*; **Data to be added**; **Output**

# Purchasing buses, continued

3. Verify vehicle suitability (based on **special requirements**)
4. Use **my location** in the Alternative Fueling Station Locator and find that the closest propane station is 13 miles away

- Compare **maximum distance** to 13 miles and eliminate public station use
- Use fuel demand to estimate on-site station size
  - *On-site station cost will be part of life-cycle cost*



5. Use GREET Fleet to estimate **fuel use and emissions**
6. Use vehicle costs (*add database of costs*) and fuel prices (from Alternative Fuel Price Report) to calculate **life-cycle costs** for new vehicle
7. Use comparable conventional vehicle data (*add database*) to evaluate **savings and petroleum and emissions reductions**

# Several features will eventually be included



- *Retrofits of existing vehicles*
- *Multiple vehicle types in fleet*
- *Regulatory constraints*
- *Life-cycle costs*
- *Construction costs for on-site refueling stations*
- *Criteria pollutant emissions*
  - *Tailpipe*
  - *Upstream*

# We need feedback from potential users

- **Do you have vehicles with special requirements?  
Examples?**
- **Are there special concerns or issues?**
  - Reliability, durability
  - Maintenance and service
  - Resale value
- **Do you have experiences that could help us identify additional factors to include?**
  - What worked well?
  - What didn't?
- **What information would you like to get out of a tool?**



# Thank you to:



- **Participants for suggestions**
- **NREL, for cooperation in linking to their tools**
- **DOE Clean Cities Program, for sponsorship**

Contact us: [lgaines@anl.gov](mailto:lgaines@anl.gov) , [aburnham@anl.gov](mailto:aburnham@anl.gov)

