City of Riverside

Celebrating An Alternative Fuels Success Story

Presented by

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Background – The Beginning

- **The Vision Begins:** In 1994 Riverside began plans for alternative fuels.
- **First Zero Emission Vehicle:** In 1994 had a Chevrolet S10 converted to electric drive.
- **First CNG Vans Purchased:** In 1994 three Dodge 12-Passenger CNG vans purchased.
- **Clean City Designation:** 1997 by Department of Energy.

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Background – The Beginning

- **Electric Charging Stations:** 1998 installed several Public Access Charging Stations.
- **First CNG and Electric Vehicles Purchased:** 1998 14 CNG vehicles purchased, including Honda's, F150's, Dodge Vans, dual-fuel Contours, and 1 EV Ford Ranger.
- **Support of SCAQMD Proposed Fleet Rules:** 2000 Council went on record supporting 1190 Series of rules.
- **Funding and Rebates:** To date the City of Riverside has obtained over 6 Million in grant funding towards vehicles, maintenance facilities, CNG and Hydrogen fueling station projects.

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CNG Refueling Station

- **CNG Station Funding:** In 2000 Riverside was successful in obtaining a $385,000 CMAQ grant to construct a 24/7 Public Access CNG station.

- **CNG Station Construction:** In January 2004, Grand Opening Celebrations were held.

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CNG Station Statistics
CNG The Most Cost-Effective Fuel

- **February 2004:** When station opened, dispensed 4,000 gallons per month.
- **August 2012:** Dispensed 81,819 gallons, of which 38,297 was to Public Access.
- **Fossil Fuel Displaced:** This means a reduction of over 929,744 gallons per year of burnt high carbon fossil fuel.
- **Average Fuel Prices 2011:**

  Diesel $4.05 per gallon
  Gasoline $3.77 per gallon
  CNG $1.33 per gallon
- **Annual savings 2011:** CNG vs Diesel is **$2,305,766** to both City and Public.

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CNG Mobile Refueler

- The City of Riverside was the 1st to design and build a mobile truck that can provide CNG fuel to vehicles that have run out of fuel, or to provide fuel during emergencies.

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CNG Powered Mobile Refueler

- The City of Riverside is currently building a CNG powered multi-compartment fuel truck, which will provide LPG, Diesel, Unleaded, and E85 to vehicles. Truck should be completed by November 2012.

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Hydrogen Refueling Station
The Cleanest Fuel For The Future

- **Five City Hydrogen Project:** In 2005 Riverside was selected to participate in the SCAQMD Five City Hydrogen project.
- **Toyota Prius Conversions:** Five Toyota Prius were converted by Quantum to run on hydrogen.
- **Hydrogen Station Constructed:** On February 1, 2006 Grand Opening Celebrations were held for the Hydrogen Generation and Refilling station which is a 24/7 Public Access station.

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Fleet Composition

- 1,294 Units are assigned in the Fleet
- 540 Units are “Light-Duty” vehicles, sedans, pickups, and vans.




- 754 Units are “Heavy-Duty” vehicles, sweepers, refuse, and other utility trucks, trailers, and other construction equipment




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Fueling Platforms

- There are eight fueling platforms in use:
  - 427 Gasoline
  - 20 Flex Fuel E85
  - 234 Diesel
  - 104 Gasoline-Electric Hybrid
  - 248 Compressed Natural Gas
  - 28 Propane
  - 2 Hydrogen-Electric Hybrid
  - 92 Electric

Includes ALL vehicles and equipment except PD

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Light-Duty Fleet

- "Light-Duty" refers to sedans and pickup trucks
  - 154 Units are CNG-powered
  - 55 Units are Electric-powered (includes NEV)
  - 12 Units are Propane-powered
  - 2 Units are Hydrogen-Electric-Hybrid-powered
  - 104 Units are Gasoline-Electric-Hybrid-powered
  - 20 Units are E85 "flex-fuel"
  - 251 Units are gasoline-powered

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Heavy-Duty Fleet

- "Heavy-Duty" refers to any Unit larger than a one-ton pickup truck, or construction equipment.
  - 77 Units are CNG-powered trucks
  - 3 Units are Electric-powered equipment
  - 20 Units are Propane-powered trucks and equip
  - 63 Units are Gasoline-powered trucks
  - 160 Units are Diesel-powered trucks

- Equipment, trailers and generators are not included

Targeted Fleet Percentage

- **Sedans:** 93% of the fleet is AFV or Clean
- **Pickups & SUV:** 96% of the targeted pickups are AFV or Clean
- **Yard Trucks:** 74% of yard, park and plant scooters electric
- **Refuse Trucks:** 68% are CNG
- **Street Sweepers:** 80% are CNG
- **Utility Trucks:** 28% of utility trucks are CNG
- **Dump Trucks:** 28% of HD dump trucks are CNG

- **Alternative Fuel Vehicles: 449 Total, 70% of Targeted Fleet**

- **Clean Vehicles Total: 629 Total, 89% of Targeted Fleet**

- AFV include Electric, CNG, or LPG
- Clean include Gas Electric Hybrids, or E85

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What Else Is Being Done?

- **CNG Time Fills:** Currently the majority of the HD vehicle fleet fuels from 98 time-fills during off peak utility hours, reducing both cost and the need for additional power plants.

- **CNG Storage:** In June 2012 MSRC Match grant funds allowed us to double CNG storage, reducing the number of compressor starts, reducing utility cost and demands, and the need for additional power plants.

- **CNG Maintenance Facility:** Were nearing completion of a new Federally grant funded CNG Bus Maintenance Facility.

- **CNG Station:** MSRC and CEC Grant funding has been secured, and bid specifications are being prepared for the installation of a 2nd Public Accessible CNG station at the Water Quality Control Plant on Acorn Street off of Jurupa. This station will not only provide CNG fast-fill, but will include time-fill for fueling Public Works Heavy-Duty vehicles at night.

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What Else Is Being Done?

- **LPG Propane Dispenser:** Clean Fuel USA dispenser has been installed at Public Access AFV Station. This is for not only existing LPG vehicles, but for future purchases of the Roush Ford F250 and F350 once CARB approved.

- **Fuel Island Canopy:** A fuel island canopy is in design to not only cover Public Access AFV station, but will be designed to include photo-voltaic panels.

- **Alternative Fuel Information and Comfort Center:** We've budgeted for and are planning for an area which will have not only a restroom, vending machines, but will have electronic AFV fueling and safety videos and kiosk for vendors to display their AFV information.

- **EV Charging Stations:** In April 2012 DOE grant funds allowed us to install and celebrate the opening of 11 Public Accessible EV Charging stations at 7 locations around the City.

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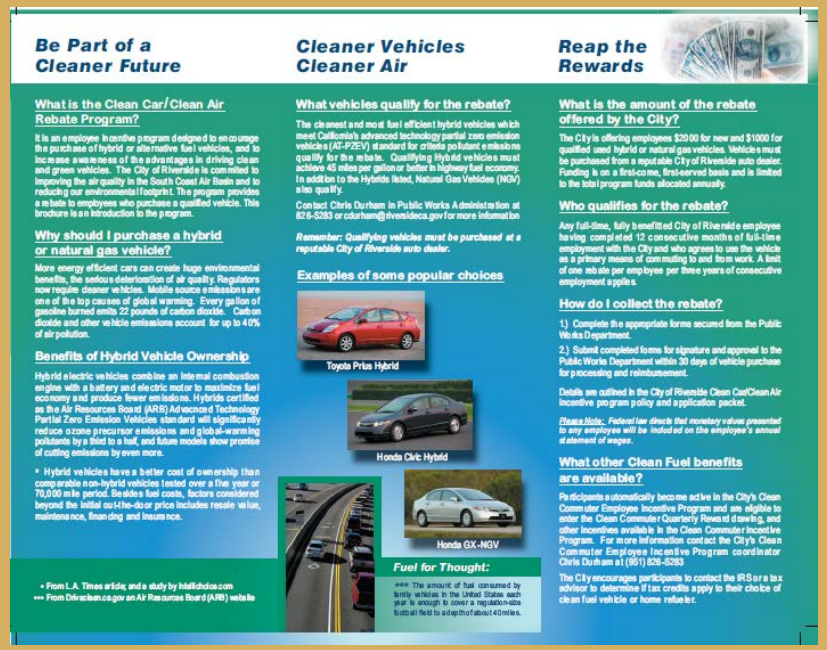
What Else Is Being Done?

- **Clean Car / Clean Air Program:** The City developed a Clean Car incentive program that provided up to *$2,500 for residents that purchase CNG, Electric and Hybrid vehicles at a Riverside dealership.



- * In July 2012 went to $2,500 for EV, $1,500 for NGV or Hybrid.

Questions for Panel

- 1. Why did your fleet start looking into alternative fuel technologies? Were you heavily impacted by regulations or was it environmental concerns? Did peer pressure have anything to do with it?

  Answer: Riverside has a long term goal that began many years ago, especially as the Inland Empire has the dirtiest air in the region. Some such as EPACT92 and SCAQMD rules, but no peer pressure, as we were already moving on the right track.

- 2. What is the most critical piece of advice you can give to someone who is on the fence about getting started with a NGV program, and, in trying to figure out what technology is best for them?

  Answer: Make sure before purchasing that you have planned for fueling infrastructure for whatever AFV platform you've chosen.

- 3. With so many advanced technology vehicles available and none of them really playing a more dominant role than the other, why should a fleet adopt natural gas now rather than wait until it becomes mature and more widely accepted?

  Answer: CNG is one of the best alternative fuels available for many reasons, abundance, reduces our dependency on foreign oil, and less expensive.

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Questions for Panel

- 4. Can you share your number one tip to either small or large business looking to integrate NGVs into their fleets without compromising their bottom line?

  Answer: Hire staff or consultants to take advantage of grant and tax opportunities.

- 5. What are some of the challenges your fleet has experienced moving to natural gas? What did you need to do to prepare in advance and how did you overcome some of the unforeseen challenges?

  Answer: Training is one of the keys to success with a natural gas fleet, not only for departments and managers, but mechanics and operators as well.

- 6. What are the reasons your agency went with this fuel type versus another type of alternative fuel?

  Answer: Natural Gas is the **"Best Alternative Fuel"** available, but don't put all your eggs in one basket and look at other platforms as well such as E85, LPG, Electric, and perhaps Hydrogen in coming years.

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Questions for Panel

- 7. You have all made great strides in implementing natural gas vehicles into your operations. When do these technologies become the predominant choice for new purchases? What will it take for that to occur, or has it already?

  Answer: When manufacturers produce OEM vehicles in CNG. You can have vehicles converted to natural gas, but it's more cost effective to buy them OEM.

- 8. If you could pick one single thing that would really get the NGV market moving, in one sentence or less, what would that be?

  Answer: More OEM production of NGV, such as pickups; Ford F150, Chevrolet 1500, and in the small SUV the Honda CR-V, or Ford Escape would be great!

- 9. Tells us what your fleet looks like in 2025? How about 2050?

  Answer: Depends upon OEM's but I would say at the current trend;

  2025: 100% of our HD fleet will be CNG with exception of Fire Emergency vehicles, and in LD, probably 50% CNG and 25% Electric.

  2050: 100% of our HD fleet will be CNG, and in LD, probably 50% CNG, 25% Electric, and 25% Hydrogen.

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Questions?

Thank You

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