

# *Strategies to Reduce your Carbon Footprint*

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*February 19, 2008*

# *Reducing your Carbon Footprint*

## *Overview*

- Understand what's coming (Segment 1)
- How to calculate your carbon footprint (Segment 2)
- **Strategies to Reduce your Carbon Footprint (Segment 3)**

# *Strategies to Reduce your Carbon Footprint (Segment 3)*

- *Step 1*
- Why Fleet/Building Managers are key players
- Assessing your jurisdiction's program and footprint
- Fleet Rules 101 - What are they?
- Developing your fleet database for decision making
- Management tools and information to support you
- *Step 2*
- Consider changes to Replacement Policies and Plans
- Consider changes to Purchasing Policies

# *Strategies to Reduce your Carbon Footprint (Segment 3)*

- Identifying Advanced Technology Vehicles
- Developing Facility Strategies
- *Step 3*
- Green Fleet Plan - California City Example
  - Long Term Objectives
  - Short Term Goals
- Examples – Green Fleet Action Plans
- Examples – Green Facility Plans

## *Fleet Operator as Key Player*

- Own, purchase, specify fleets of vehicles and equipment
- Specify and purchase future fleets
- Can influence how vehicles and equipment are used
- Manage and specify underground storage tanks
- Manage, influence location & specify new repair facilities
- Reducing footprint a high public priority/competes for \$\$
- Rule compliance expands fleet manager traditional role
- "Green Fleet Manager" – a role model in the community
- Must Start "now"

# *Building Manager as Key Player*

- Green Building Initiative - Exec. Order S-20-041
- 10% Reduction by 2010; 20% by 2015
- Energy is 30% of building operating cost
- Space heating is 37% of building energy consumption
- Green Building Action Plan - State
- Green Building Council - National
- National Green Building Standards

# *Assessing your Jurisdiction's Programs and Carbon Footprint*

## *Who are the key players? Who will lead?*

1. General Fleet – Public Works or General Services
  - Light duty
  - Heavy duty
  - Off Road
2. Transit – in house or special district and contracted
3. Fire – in house or special district
4. Refuse – both in house and contracted
5. Other Special Districts
6. Jurisdictional areas and exceptions

# *Fleet Rules 101*

***What rules apply to each segment of your fleet?***

***What mandates are coming in the future?***

EPA/EPACT/Clean Air Act

Attainment/Non-attainment

California Clean Air Act /CARB

SMAQMD

Heavy duty – On road & Off road C.A.R.B.

Transit Authority – C.A.R.B.

Fire Authority – Exempt?

Refuse – Who enforces? What do your contracts call for?

Do you have a contractor policy calling for a “Green Fleet?”

AB 32/AB1493/Federal Rule

# *Strategies – Opportunities to Implement Best Fleet Practices*

## *Traditional best fleet practices*

- Centralized Fleet Management
- Other Fleet Management Policies to activate
  1. Reducing take home vehicles
  2. Employee commute program issues
  3. “Right Size” the fleet - eliminate unnecessary units
  4. Control additions to the fleet
  5. Implement vehicle assignment criteria
  6. Develop pooling approaches; share/rent costly units
  7. Identify right vehicles for the job
  8. Minimize miles traveled with GPS & routing software

## *Strategies – Developing your Fleet Database for Decision Making*

- Fill key data fields in your database - engine family, projected replacement year, fuel type, assignment
- Download to Spreadsheet
- Location and type of fuel become important factors
- Desktop availability for clean air partners
- Keep logs of fuel availability in your service area
- Records management and reporting requirements

## *Strategies – Management Tools and Information to Support You*

- Resource Development - finding fuel, vehicles, vendors, support and technology
- Cooperative joint ventures for carbon footprint strategies
- Join Regional Clean Air Coalitions and other groups
- Interact with professional groups, such as PEMA, PFSA, to develop, share and implement plans
- Promote and lead clean fuel and low carbon alternatives
- Communicate progress
- Regulations 101

## *Strategies – Consider Changes to Vehicle Replacement Policies and Programs*

- Develop new criteria to identify target replacement candidates based on carbon output
- Add new criteria to your replacement evaluation process
- Modify the replacement schedule to reflect air quality and alternative fuel needs
- Merged data will assist in the final replacement determination
- Example of Green Fleet replacement plan criteria

## *Example - Green Fleet Replacement Plan Criteria*

- **Category A – Light or medium duty trucks used in maintenance**
- *Replacement Criteria – must meet any three (3) of the following:*
  1. Mileage over 80,000 or a combination of mileage and idling time (one hour = 35 miles) that equates to 80,000 miles
  2. More than 8 years old
  3. Annual maintenance and/or general repair costs exceed \$4,000
  4. Overall condition of the vehicle is poor
  5. Vehicle sustained major body damage exceeding \$4,000 repair
  6. Engine or transmission requires replacement
  - 7. High Polluting or High Carbon Footprint vehicle**
  8. Recommendation from the Fleet Manager.

## *Strategies – Consider Changes to Purchasing Policies*

- Purchasing Policy should reflect life cycle, air quality or carbon reduction plan
- A weighted schedule must be developed to include procurement or purchasing rules – use of point system
- Example of a City program that includes air benefit assessment – e.g., on green vehicle list
- Policies need to be amended

## *Example - Weighted Green Fleet Purchasing Policy*

- *Develop Your Formula*

<b>Category</b>	<b>Weighted Percentage</b>	<b>Points</b>	<b>Extension</b>
Specification Compliance	50%	1-10	
Price	20%		
Carbon Benefit/Reduction	15%		
Warranty	5%		
Resale	5%		
Dealer Location	5%		

- **Total Points**

## *Example - Carbon Benefit Point System*

- | Rating  | Points |
|---------|--------|
| ZEV     | 10     |
| AT-PZEV | 8      |
| PZEV    | 6      |
| SULEV   | 4      |
| ULEV    | 2      |
| LEV     | 0      |

# *EPA Guide: Alternative Fuel and Advanced Technology Vehicles*

## Example: Ford Motor Company

<u>Fuel Type</u>	<u>Model</u>	<u>Type</u>	<u>EPAct Cmplnt</u>	<u>Emission Class</u>	<u>P-Train</u>	<u>Alt Fuel Economy</u>	<u>Gas Fuel Economy</u>
E85 FFV	Crown Victoria	Sedan	Yes	LEV II, Tier-2 Bin 5	4.6L V-8	11/16	15/23
E85 FFV	F-150	Lt. Duty Pickup	Yes	LEV Tier-2 Bin BA	5.4L V-8	10/13	13/18
HEV	Escape Hybrid	SUV	Yes	SULEV II AT-PZEV	2.3L ECVT E4	N/A	34/30

## *Strategies – Consider Changes to Purchasing Policies*

- Get your Board or Council to adopt the green fleet purchasing policy and “Green Fleet Plan”
- Establish partnerships with your AQMD or APCD and other agencies to “piggyback” on contracts
- Pre-approve current year model list provided by EPA as green fleet vehicles

## *Green Fleet Plan – California City Example*

- Address air quality issues and consumption of carbon fuels associated with environmental concerns, particularly global warming
- Reduce fleet fuel use and emissions
- Reaffirm commitments to environmental protection
- Set goals and targets for compliance with a series of rules by both Federal and State regulators

## *Example - Green Fleet Plan Long Term Objectives*

1. A fleet that is 100% clean and green, that is, comprised of fuel efficient, low emission vehicles
2. Continuous annual review of life cycle costs and benefits
3. Make disposal/acquisition decisions per an annual review and current technology
4. Train staff in operating and fueling vehicles
5. Reduce annual fleet fossil fuel use by 5% per year until achieving 100% clean goal
6. Right vehicle for right job/minimum engine size needed

## *Example - Green Fleet Plan Long Term Objectives*

7. Join Silicon Valley Clean Cities Coalition to network and make informed green fleet decisions
8. Participate in BAAQMD Cities for Climate Change Protection campaign
9. Seek partnerships with nearby fleet agencies
10. Seek grants from all sources to achieve the new green fleet objectives

## *Example - Green Fleet Plan Short Term Objectives*

1. Use B20 Bio-Diesel in all diesel equipment by 2009; convert diesel storage tanks; investigate wet fuel contracts
2. Purchase all flex-fuel vehicles, when available, for light and medium duty vehicles; assign hybrids to high use/where no fuel available

## *Example - Green Fleet Plan Short Term Objectives*

3. Revise purchasing guidelines to encourage alternative fuel and green vehicle choices; develop replacement strategy using EPA Green Fleet Vehicle Guide; Clean air and climate protection software; modify replacement criteria
4. Revise work planning and operational guidelines to foster clean air and reduced fuel use

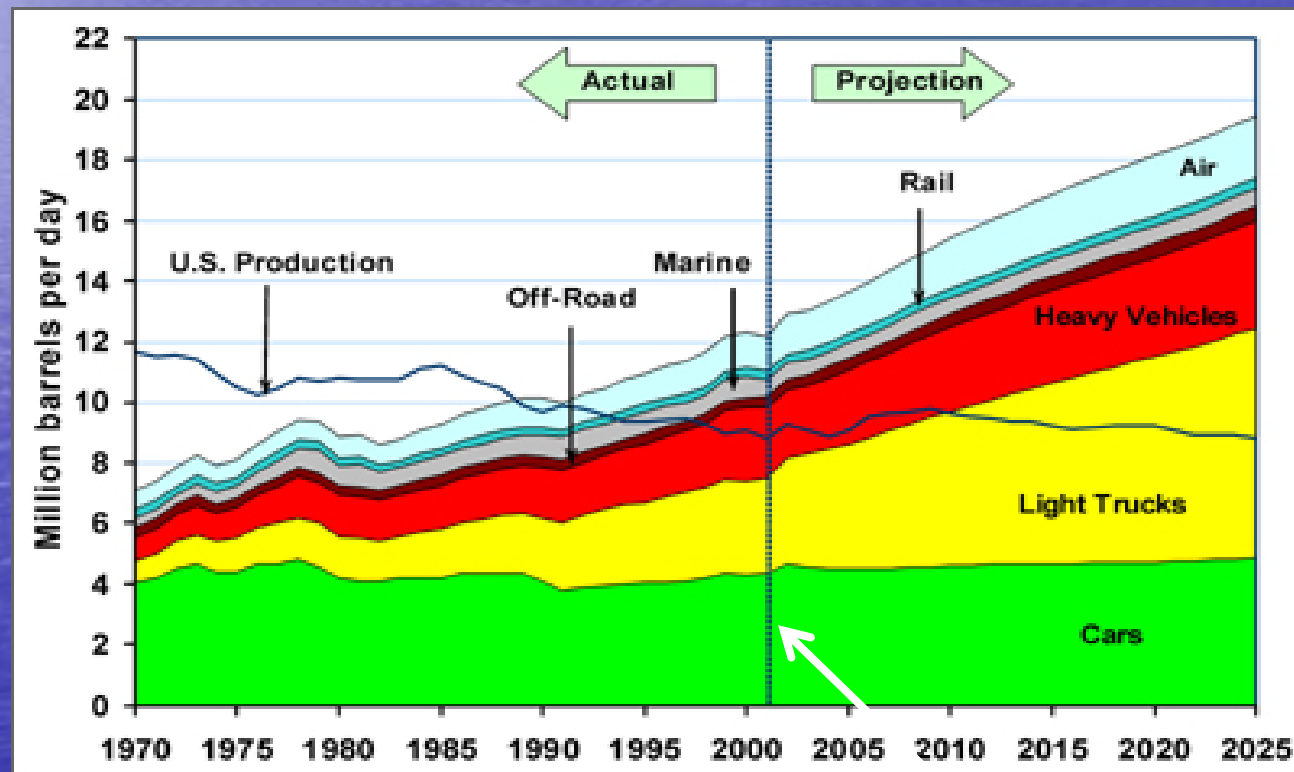
## *Example - Green Fleet Plan Short Term Objectives*

- Review use of practices - how staff dispatched, where they are going, overlapping divisions, where material stored for job planning and efficiency
- Train vehicle operators in appropriate operational techniques and which fuels are acceptable, particularly in flex fuel vehicles
- Allow vehicle idling for safety, emergency response, vehicle maintenance, equipment or tool activity, and cold warm up per manufacturer recommendations

## *Example - Green Fleet Plan Short Term Objectives*

- Work with Air District in sustaining programs and determining the most advantageous methods of clean fuel and air control
  - Abide by latest published refueling time/season guidance
  - Review fuel card system to collect fuel information from all sources
5. Use E85 in all flex fuel vehicles by 2010;  
monitor fuel environment continuously

## *Transportation Petroleum Use by Mode and Domestic Petroleum Production, 1970-2025*



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2001

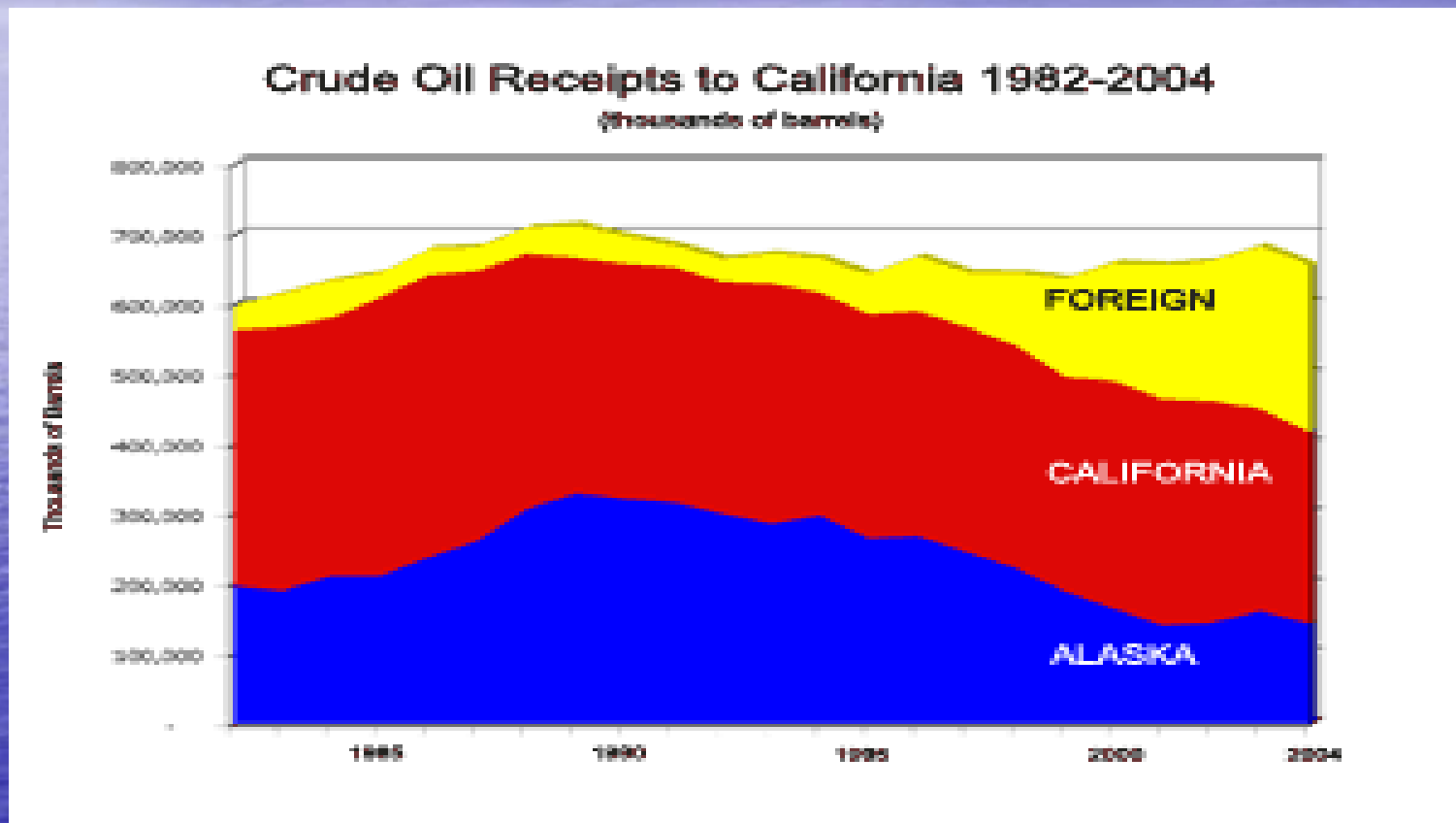


# CRUSH THOSE TRUCKS COMPLIANCE

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# Crude Oil Receipts to California 1982-2004

Source: [www.energy.ca.gov/afvs/vehicle\\_fact\\_sheets/index.html](http://www.energy.ca.gov/afvs/vehicle_fact_sheets/index.html)



## *Facility Strategies*

- LED Traffic lights are 71 % more efficient
  - Lighting retrofits or removal, HVAC replacements
  - Dark Hour, Skylights, White Floor
  - Programmable Thermostats
- Turn off computers/other energy consumers when not in use/Energy Star appliances
- Recent studies linked company environmental management to bottom line
- Case Studies - Cities of Sacramento, Pasadena, San Francisco, La Mesa, Atascadero

# *City of Sacramento Facility Improvement Plan*

- 23 retrofit projects reduced cumulative electrical usage by 38%
- \$440,000 in savings, \$535,000 in SMUD Rebates
- Programs: Occupancy light sensors, conference rooms, storage
- Summertime casual dress policy
- Irrigation between 10PM-10AM off peak; Water Heaters set at 120F.
- Air Cooling units replaced with energy efficient chillers
- Conventional A/C units replaced with SEER rating of 12 or above
- Replaced T12 with T8 lamps; Retrofit traffic signals with LED's
- Implemented inductive street light project
- Replaced sewer and water pumps with high efficiency units
- Converted to variable speed pumps for irrigation
- Communications - packets to employees, Watt's Up, Energy Fairs

## *Case Study - Green Fleet Action Plan City of San Jose*

- Current Status - 2700 vehicles including 927 alternative fuel, 623 bio-diesel, also CNG, Hybrids, Electric
- FY06-07 \$750,000 and FY 07-08 \$1.6 M. replacement funding
- Program Factors - Fleet Audit Required
  - Economic stability for replacement mandatory
  - Emission goals identified
  - Replacement policy amended and mandatory
- Green Fleet Plan - B5 will be converted to B20
  - Continued diesel retrofits
  - Replacement fund use consistent with Green Fleet Policy
  - Pursue grants for incremental costs
  - Watch market changes

## *Case Study - Green Fleet Action Plan County of Santa Clara*

- Fleet Profile - 1700 County vehicles and equipment
- AFV Challenges - Purchasing policy and decisions
- Review functionality for intended use; formalize 10 Year plan
- 156 Alternative Fuel units - 60 hybrid, 52 NEV, 32 Electric, 12 Propane, 20 - 2007 Diesel retrofits, 32 - 2008 Diesel retrofits
- Tips for Fleet Managers - gather data, fuel use, mileage and more
- Stay abreast of legislation and rule making
- Monitor OEM developments; participate in Fleet professional groups
- Communicate with user/update vehicle selector; Max grant funding
- Strong AFV demand and support from management

## *Case Study - Green Fleet Action Plan Maricopa County, Arizona*

- Adopted Green Fleet Action Plan - November 2007
- Purchasing decision based on environmental cost
- Uses traditional replacement funding and existing plan as foundation
- Includes incentives for upgrade costs
- 2000 vehicles will be swapped for cleaner more efficient units
- Fleet travels 25 million annual miles; emits 30 m. lbs. emissions
- 3 M. lbs. minimum reduction expected; could reach 15 million
- Est. annual fuel savings after first phase of 312 units = \$1.1 M.
- Plan published in area's media

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