

**Vehicle**

Fleet Emissions Control Strategy

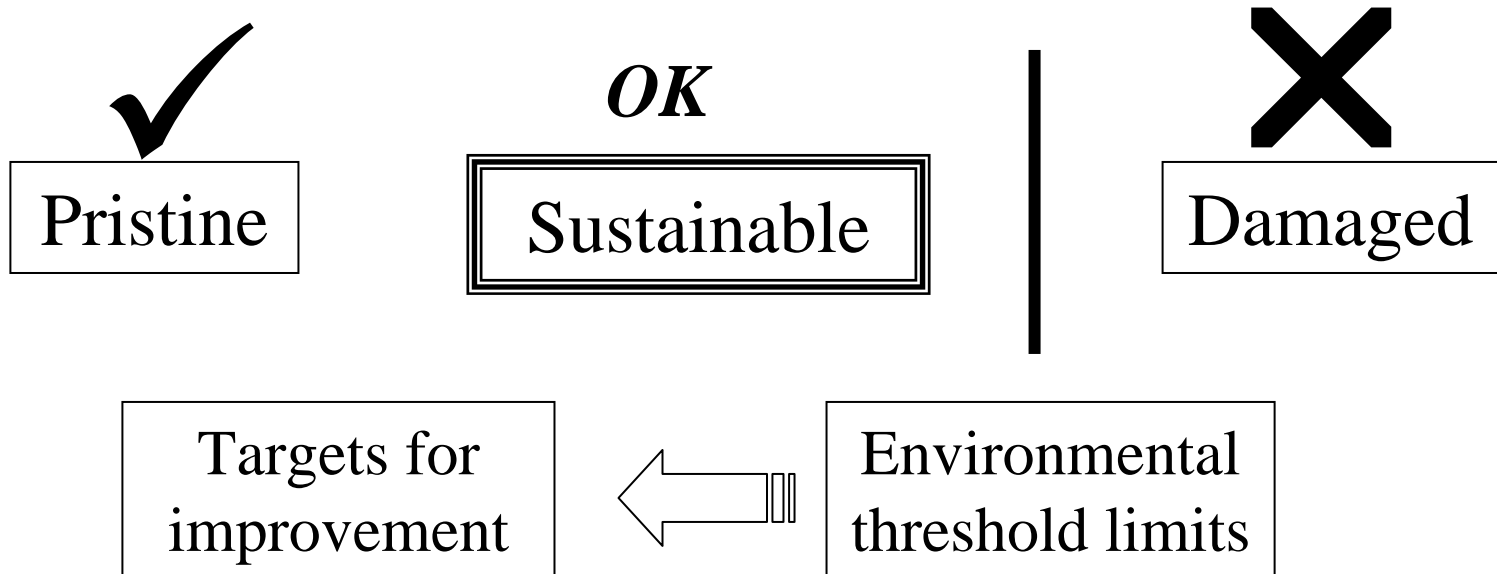
For Local Air Quality Management

**New Zealand's Approach To Vehicle Emissions  
Control Policy**

**“VFECS”**

**The logic behind it, and what it was designed to do**

# Pollution to the Environment - what's OK vs. what's not



- Sustainability implies a corresponding “capacity” for emissions activity;
- Emissions loading vs. pollution balance, as a target limit for the particular local eco-system

# Environmental Management; Basic Principles

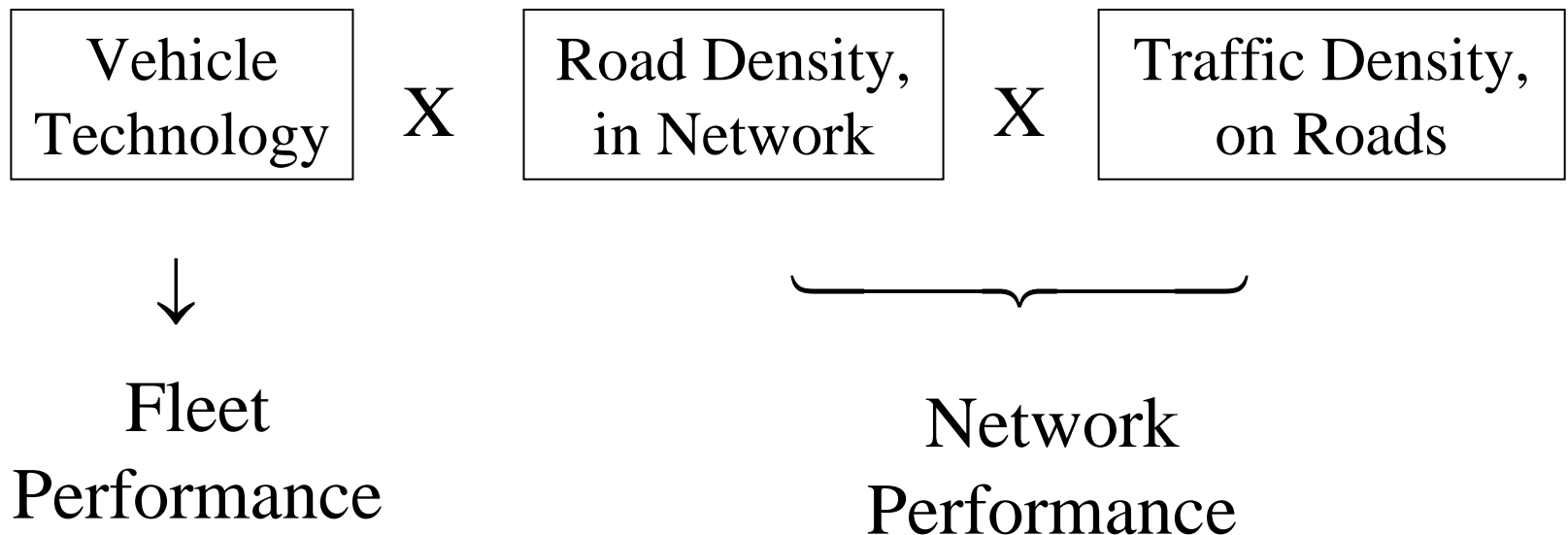
- Legislative framework is Resource Mgmt. Act
- Effects based; define problem to analyse solution
- RMA obligations, e.g.;
  - duty to consider alternatives, assess benefits/costs; what is most appropriate means .... having regard to its efficiency and effectiveness relative to other means.
  - duty to monitor....suitability of any policy/ plan for region
- For local air quality, AQ Guidelines set maxima, then EPI categories for ongoing improvement
- Numerical basis for setting targets for AQ management
- Starting point for assessing relative effectiveness of emission control strategies

# Air Quality Mgmt. vs. Emissions Mgmt.

- AQ mgmt.; sets AQ guidelines, monitors AQ against these, to determine the pollution problem
- Emissions mgmt.; needs problem defined in terms of;
  - nature of problem; the pollutant
  - degree of problem; how much does level exceed target
  - the source of the problem; vehicles vs. other
  - the location/spatial extent of the problem
- To identify what emission activity needs attention, by how much, and over what area, to analyse most effective/least cost solution
- Needs also to consider impacts on other environmental issues, and overall urban mgmt./development

# Local Vehicle Emissions Loading;

Product of three factors, within airshed, with spatial implications (local urban form)



# **Emissions Measures - Vehicle Fleet Emissions Model (VFEM)**

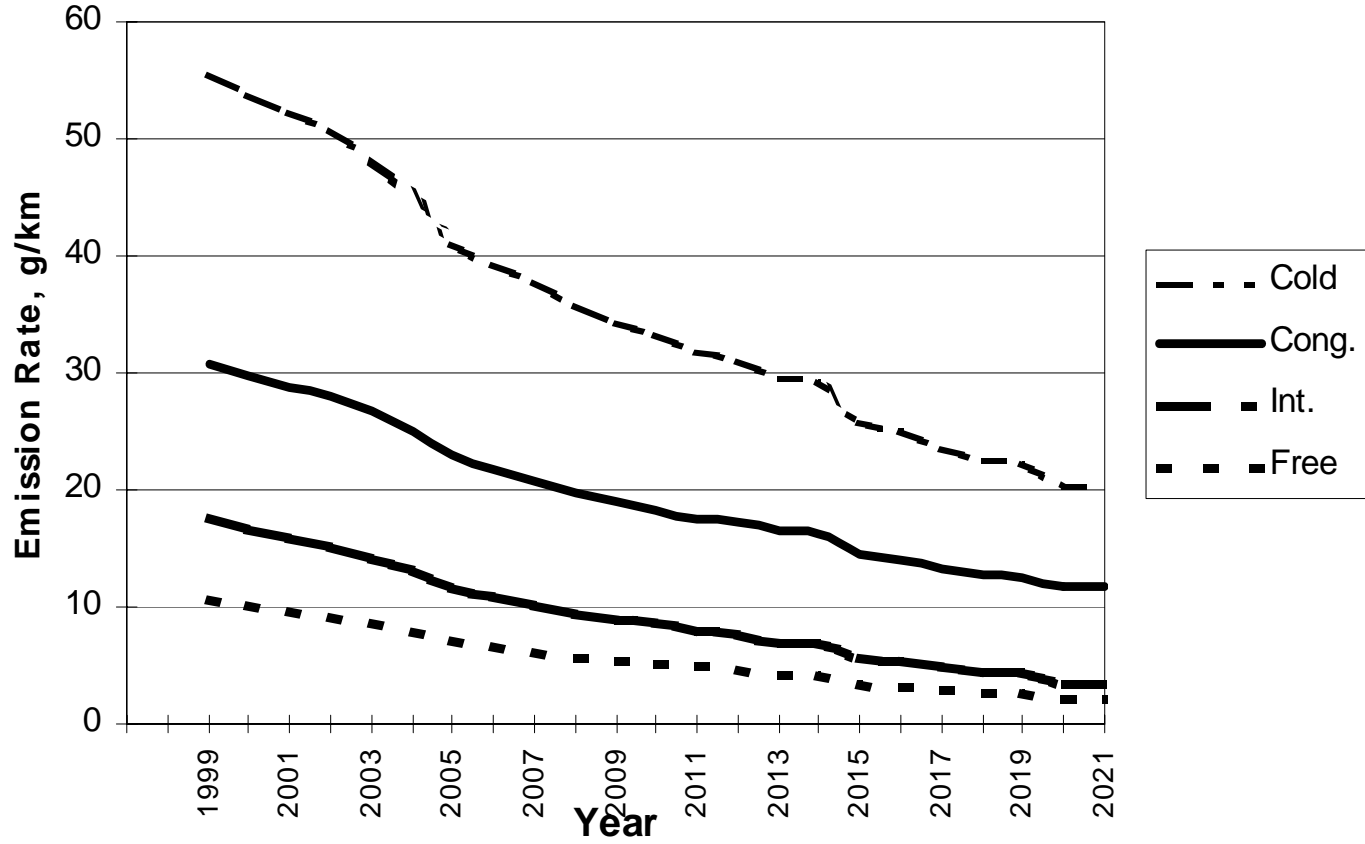
- Projection of vehicle emissions rates with fleet evolution trends
- Framework for correlating;
  - vehicle technology, emissions performance
  - fleet turnover projections, through future
  - driving conditions, road type; drive cycles conform with traffic mgmt./road design classifications
- Gives vehicle traffic emission factors that relate to local corridor flow conditions; integrate with urban traffic model
- Baseline values to indicate trends, basic comparisons
- Provision for modelling particular localised relationships/strategies, where needed - indicates data inputs required

# Emission Rates by Vehicle Technology – Primary Matrix;

Road Type	Driving Condition				
	Idle	Cold Running	Freeflow, LoS A/B	Interrupted, LoS C/D	Congested, LoS E/F
Central Urban					
Suburban					
Highway					
Motorway					

*Emission Rates, g/km*

### Corridor Flow; Traffic Weighted Ave. Emission Rate - CO



# **Spatial Correlation between Air Quality & Emissions Outputs**

- Need a form of emissions mapping, in the local airshed, at resolution consistent with nature of AQ concern
- Relating the individual source loadings to their geo-spatial distribution
- Compare vehicle emissions contribution with other local sources
- With consistent time-based output profiles
- Compare balance between time averaged emissions loadings with monitored pollution levels
- Emissions loadings a proxy for AQ targets, to determine measure of reduction required

# ELGO Vehicle Emissions Display



Scenarios

Vehicle: 1999

Non Vehicle:

Time

Vehicle: 07:23:50

Non Vehicle: 07:00:00

Emissions Output (g/hr)

Type	Vehicle	NonVehicle
HCHO	0.00	0.00
NOX	124566.57	0.00
PAH	0.00	0.00
VOC	83030.53	0.00
BZ	0.00	0.00
CO	520744.72	0.00
PM	11134.33	0.00

Section List:

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Delete Store Current

Section Details:

[Dropdown menu]

LDS:

Capacity:

No. Vehicles: 1765

Road Type:

Avg Speed:



# ELGO Non-Vehicle Emissions Display



Scenarios

Vehicle:

Non Vehicle: 1999

Time

Vehicle: 00:00:00

Non Vehicle: 00:00:00

Emissions	Output (g/hr)	
	Vehicle	NonVehicle
HCHO	0.00	0.00
NOX	0.00	0.00
PAH	0.00	0.00
VOC	0.00	0.00
BZ	0.00	0.00
CO	0.00	0.00
PM	0.00	0.00

Section List:

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Section Details:

LDS:

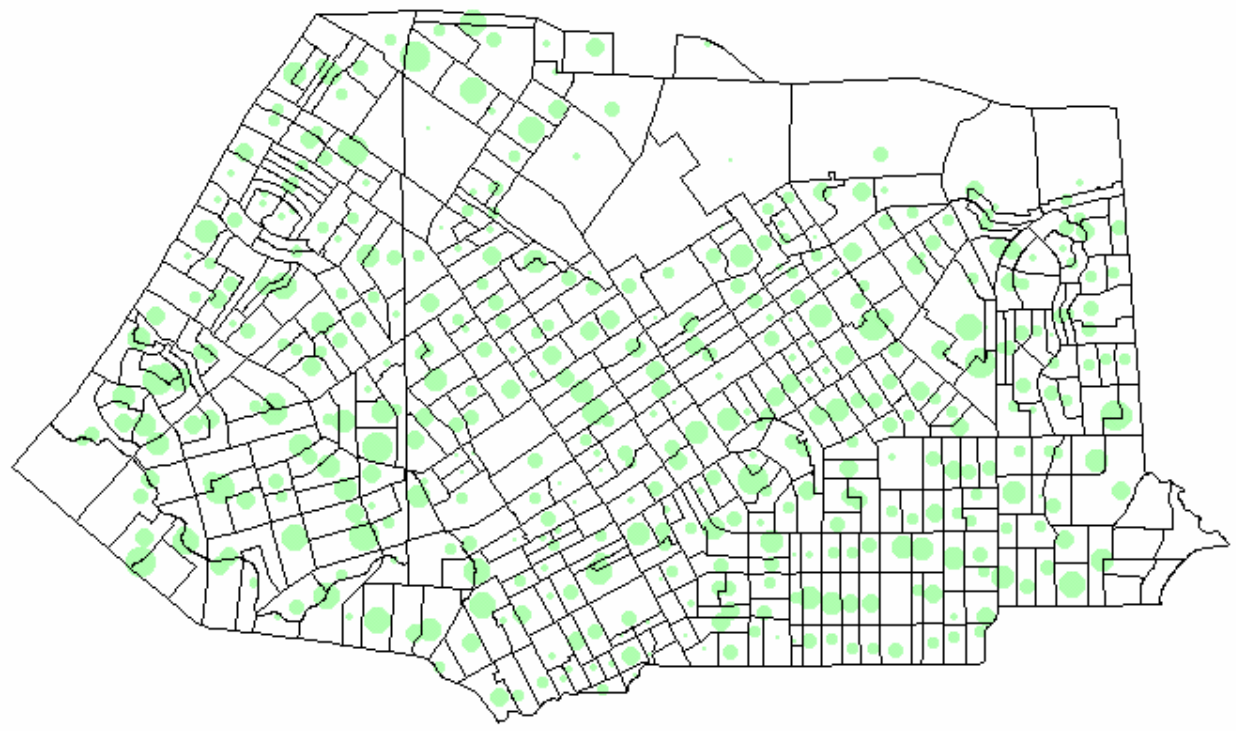
Capacity:

No. Vehicles:

Road Type:

Avg Speed:

V,Idle  
NV,Cycle





Scenarios

Vehicle: 2001

Non Vehicle: 1999

Time

Vehicle: 07:18:32

Non Vehicle: 07:00:00

Emissions Output (g/hr)

Type	Vehicle	NonVehicle
HCHO	0.00	0.00
NOX	1228.07	32.71
PAH	0.00	0.00
VOC	713.29	465.14
BZ	0.00	0.00
CO	4168.68	1859.95
PM	150.68	383.37

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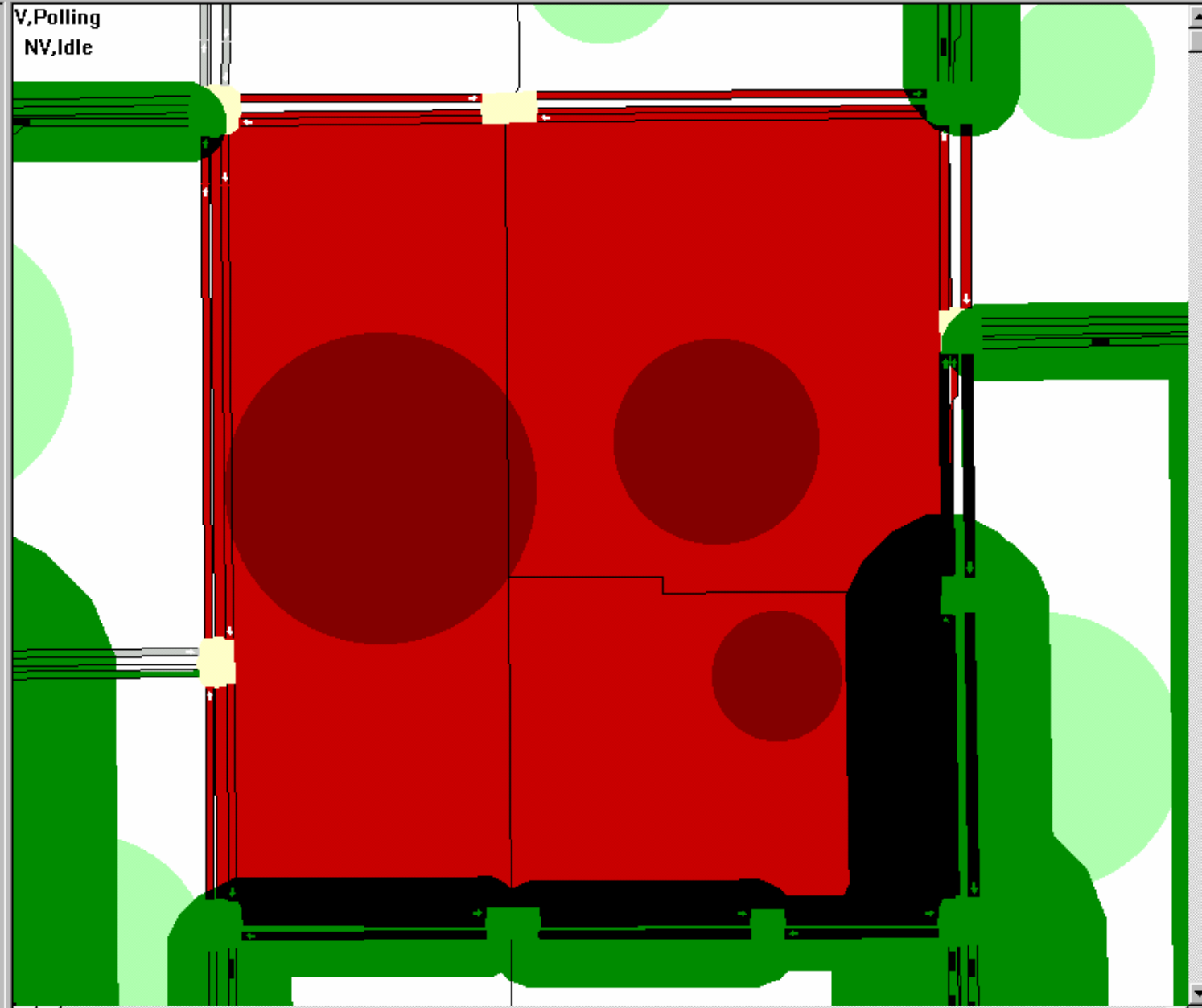
LDS:

Capacity:

No. Vehicles: 16

Road Type:

Avg Speed:



**Environmental Impacts of Road Transport - Integrated ECA Management  
Air, Water & Energy Consumption/GHG (& Noise?)**

*Define the Problem - Analyse the Solution*

