



Office of  
Financial Management  
STATE OF WASHINGTON

# Activity Inventory Performance Measure Assessment

## Department of Ecology

### Air Quality Program

*August 2, 2007*

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Based on a review of the following: The agency strategic plan, the budget activity inventory, internal performance measure reports, and an interview with the agency contacts

# Current Strengths and Good Practices

- All the budget activities are linked to at least one performance measure
- For the most part, data for the most recently completed quarter or fiscal year was available.
- The program was able to provide context for most of the measures.
- Despite the technical nature of the subject, the titles of the measures were very understandable.
- Most of the performance measures focus on program and societal results (outcomes).
- Most of the measures are also tracked internally as a part of the agency strategic plan performance review process.

# Activity Measure Comments and Potential Improvements

- The measure tracking the percent of the population living where air quality is routinely monitored (Slide 13) has served its purpose. Now that 100% of the population is living in monitored or modeled areas, this measure could be retired and replaced with something tracking the benefit or result of this monitoring. It could also be restructured to reflect the percent of the population covered by monitoring alone, assuming the state's goal is to provide monitoring everywhere.
- The targets for two measures should be re-examined by the program:
  - AQ05 - Without some context, the reason why it would be desirable for the percent of vehicle emissions reductions to decrease over time is not clear.
  - AQ08 - The Average Notice of Construction Permit processing time has improved to the point that the 30-day target is now obsolete. The 2007-09 target of 24 days is also being met every quarter.
- In order to focus the discussion on overall results, measures showing seasonal cycles (AQ03 & AQ07) might be better if they were reported annually in the Performance Measure Tracking System (PMT).
- Two measures track the percent of emissions reduced (Diesel in Puget Sound and motor vehicles). In both cases, the measures depend on a "baseline" of one year from which the reduction percentages are calculated. A single data point is not a good baseline, because of the normal variation that exist in all measurements. If the program reported the actual emissions amounts, the calculation of the percentage would be unnecessary.

# Analysis of Current Activity Measure Data

- Two measures (AQ03 & AQ07) appear to have a repeating cycle linked to the seasons.
  - AQ03 - When the data are displayed in their seasons, the number exposed does not appear to be changing. Given the increasing population of the state, this could be seen as a sort of performance victory for the program.
  - AQ07 - The data point for the 5<sup>th</sup> quarter of 2005-07 is abnormally high when placed alongside the other data points for the warmer months. Either there was a data entry problem or something significant (and undesirable) happened.  
Agency Comment - Smoke from the Tripod Complex and Columbia fires in the late summer and early fall of 2006 had a significant negative impact on air quality in North-central and Southeastern WA.

# Agency Comments and Future Actions

Monitoring - We will change this measure to one that reflects how well our monitoring data represents local air quality.

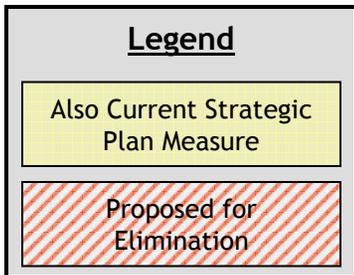
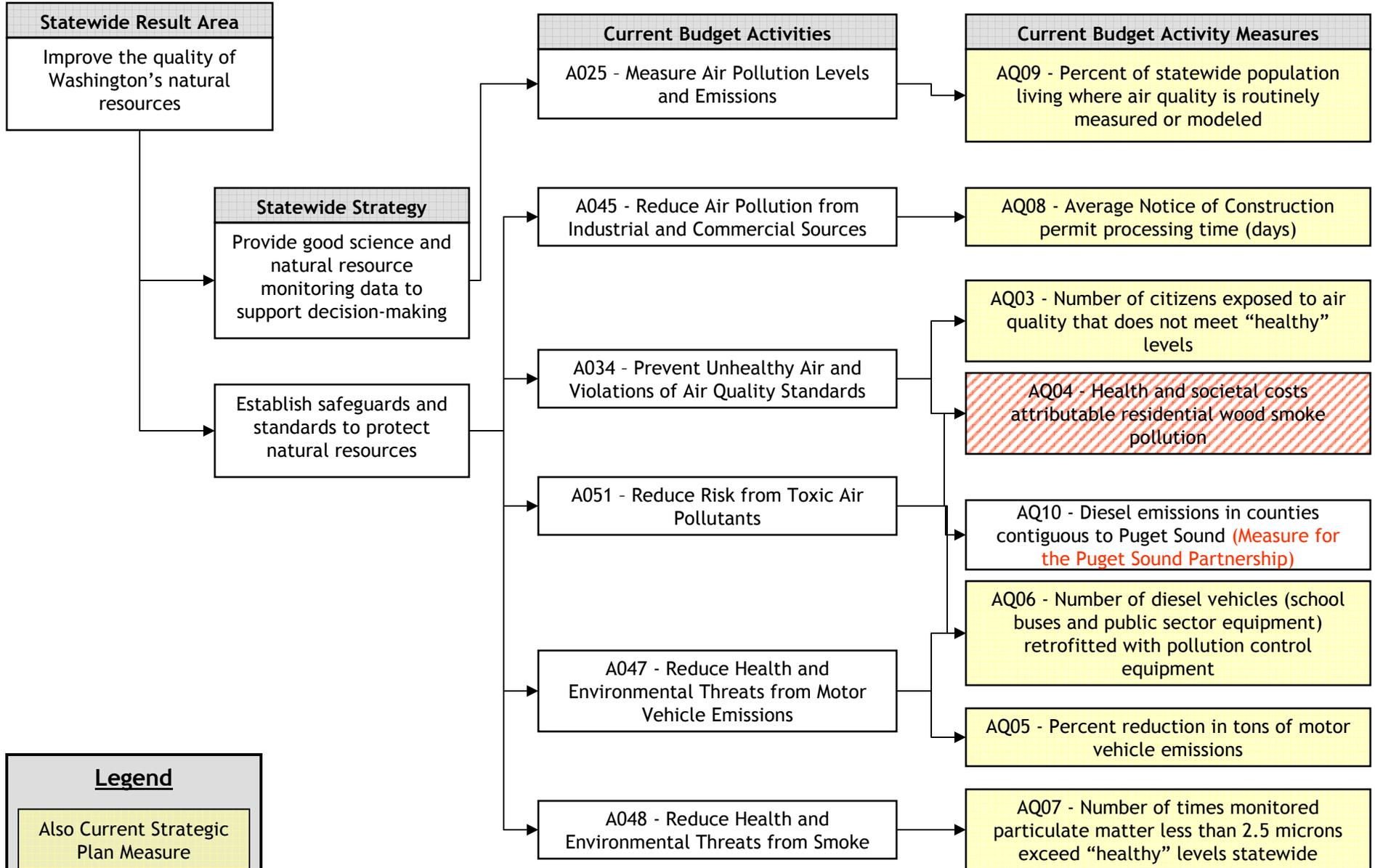
Targets -

- Measure will be modified to show annual emissions rather than percent change. Vehicle emissions are affected by miles driven, the fuels used, the age and technology of the vehicle, and proper maintenance of the vehicle and its pollution control systems. Ecology has some control over the maintenance element in major urban areas of the state, some control over motor fuels, and the ability to adopt the tighter CA vehicle emissions standards, an authority the state has exercised beginning with 2009 models. While vehicle engines are getting cleaner, growth in population and vehicle miles traveled can overtake that technological progress. Vehicles are by far the largest source of air pollution in WA. Even though elements of vehicle emission control are outside the state's jurisdiction, it remains important to track trends in vehicle emissions to be able to appropriately respond to the health implications of vehicle related pollution.
- Notice of Construction processing time is stipulated in regulation. While we continually strive to improve performance, the "target" is used to convey an expectation of how long processing the permit should take. Technical considerations can cause significant deviations from average processing times for individual NOCs. Ecology will evaluate its performance target with an eye toward shortening it while taking into account what expectations that may create in the business community.

Percent reduction emissions data - will be changed to actual tons of pollution reduced.

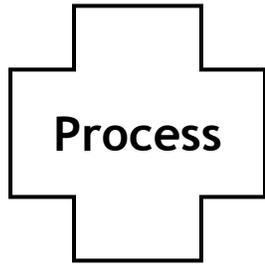
"Seasonal Cycle" data - we will change to annual reporting.

# Budget Activity & Performance Measure Linkages



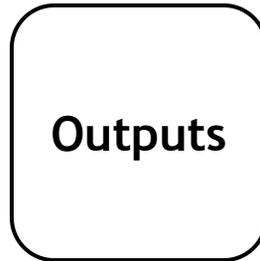
# Budget Activity Measure Perspectives

⑤ Process characteristics the customers/stakeholders want



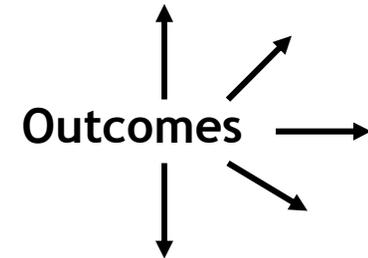
⑥ Process characteristics the agency wants

③ Product/service attributes customers/stakeholders want



④ Product/service attributes the agency wants

① Customer/stakeholder desired outcomes



② Agency desired outcomes

AQ08 - Average Notice of Construction permit processing time (days) ⑤

AQ09 - Percent of statewide population living where air quality is routinely measured or modeled ⑥

AQ06 - Number of diesel vehicles (school buses and public sector equipment) retrofitted with pollution control equipment ③

AQ03 - Number of citizens exposed to air quality that does not meet "healthy" levels ①

AQ04 - Health and societal costs attributable residential wood smoke pollution ②

AQ05 - Percent reduction in tons of motor vehicle emissions ①

AQ07 - Number of times monitored particulate matter less than 2.5 microns exceed "healthy" levels statewide ②

AQ10 - Diesel emissions in counties contiguous to Puget Sound ①

**Legend**

Strategic Plan and Budget Activity Measure

# Activity Measure Assessment - Exposure to Unhealthy Air Quality Levels

**Performance Measure Description:** Number of daily average monitoring measurements that exceed healthy levels multiplied by the estimated population in proximity to the monitoring station.

**Budget Activity Links:** A034 - Prevent unhealthy air and violations of air quality standards.

**Category of Measure:** An undesirable outcome

**Analysis of Variation:** A seasonal cycle is apparent. Examined separately (lower graph) both sets of data display stable and predictable variation patterns.

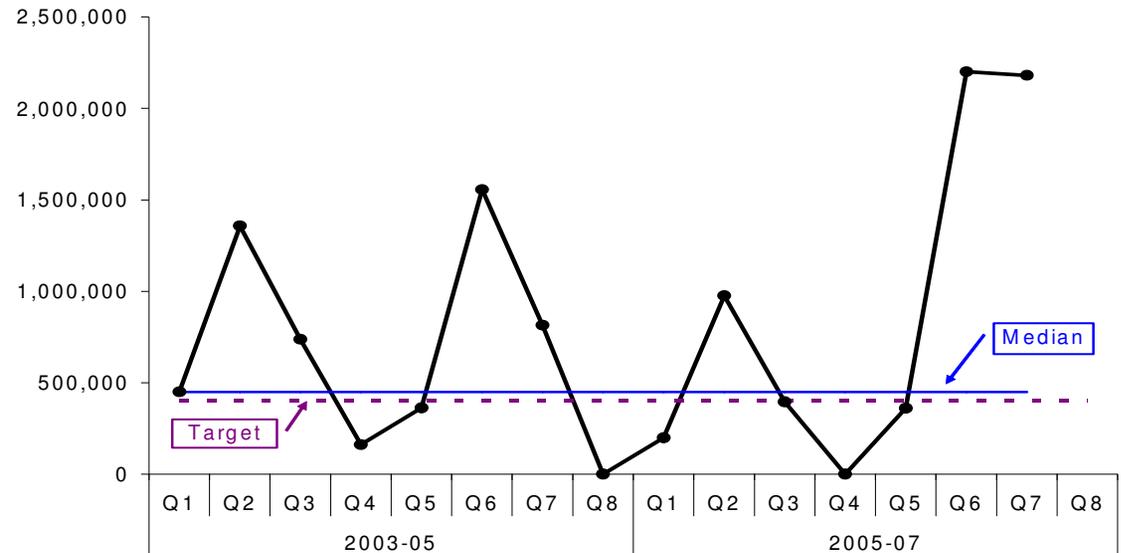
**Analysis of Targeted vs. Actual Performance:** Because of the seasonality of the data, the 400,000 threshold is usually maintained in the warmer months and always exceeded in colder months.

**Relevance:** Good - The agency has the authority to ban outdoor burning when the air is stagnant, and has influence over the design of wood-burning stoves used for heating - The two main sources of air quality pollution in this state.

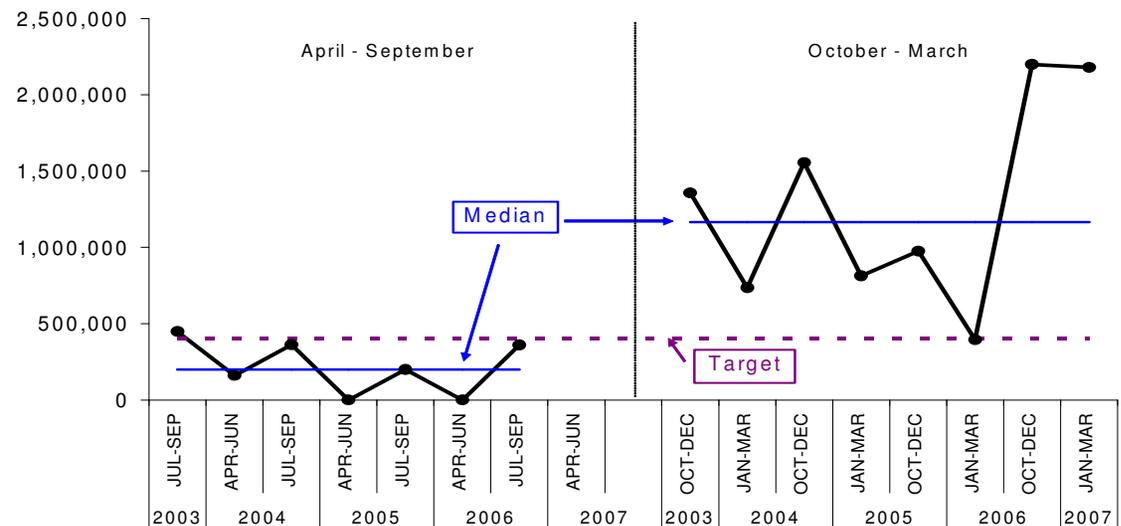
**Understandability:** Good, but because of the cyclical nature of the data, the measure would lend itself better to an annual measure in PMT.

**General Comments & Explanations:** The number of people exposed to pollution at 20 micrograms per cubic meter of air will be significantly higher than the number of people exposed at 35 micrograms per cubic meter of air (the federal standard).

**AQ03 - Number of Citizens Exposed to Air Quality that Does Not Meet "Healthy" Levels**



**AQ03 - Number of Citizens Exposed to Air Quality that Does Not Meet "Healthy" Levels (Seasonal)**



# Activity Measure Assessment - Motor Vehicle Emissions

**Performance Measure Description:** Data comes by multiplying the change in average emission rates by the estimated vehicle miles traveled each year.

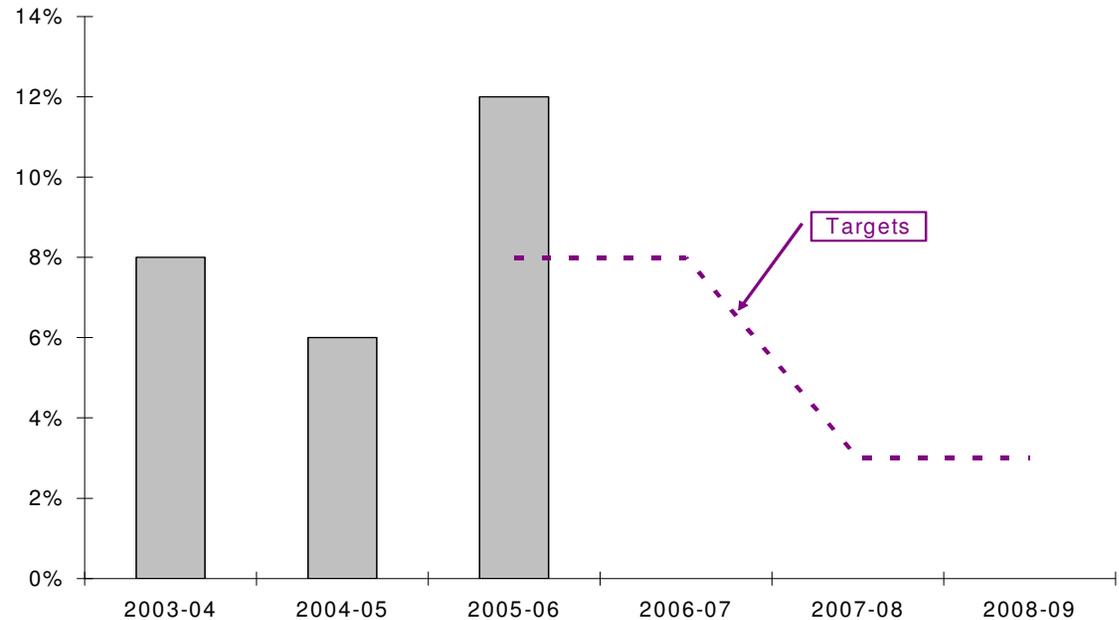
**Budget Activity Links:** A047 - Reduce the health and environmental threats from motor vehicle emissions.

**Category of Measure:** Outcome

**Analysis of Variation:** Not enough data for any analysis, but nothing in the data looks abnormal at this point.

**Analysis of Targeted vs. Actual Performance:** Has met or exceeded the target in 2 out of the three years reported.

**AQ05 - Percent Reduction in Tons of Motor Vehicle Emissions**



## Comments About Desirable Characteristics

**Relevance:** The agency only has influence over two of the factors that contribute to vehicle emissions (Pollution controls and fuels used).

**Understandability:** The title is clear but the actual amount reduced is not, because it is based on a single year baseline reference point.

**Comparability:** The nature of the baseline reference point compromises comparability, because other states could use different reference years.

**Timeliness:** Data from the most recently completed fiscal year was not available at the time of this assessment.

**Reliability:** Using a single year as a baseline from where reduction percentages are calculated does not account for year-to-year variability that would affect the calculation.

**Cost Effectiveness:** This measure is used for many other reporting purposes, including regular reviews of strategic plan performance.

## General Comments & Explanations:

This measure would be more comparable, reliable, and understandable if it tracked the actual amount of emissions.

### Agency Comment:

Vehicle emissions are affected by miles driven, the fuels used, the age and technology of the vehicle, and proper maintenance of the vehicle and its pollution control systems. While vehicle engine and fuel technology is improving and emissions are getting cleaner, growth in population and vehicle miles traveled can overtake that technological progress.

# Activity Measure Assessment - Diesel Vehicles with Pollution Controls

**Performance Measure Description:** According to the agency, there are roughly 8,000 vehicles currently in service that meet this description.

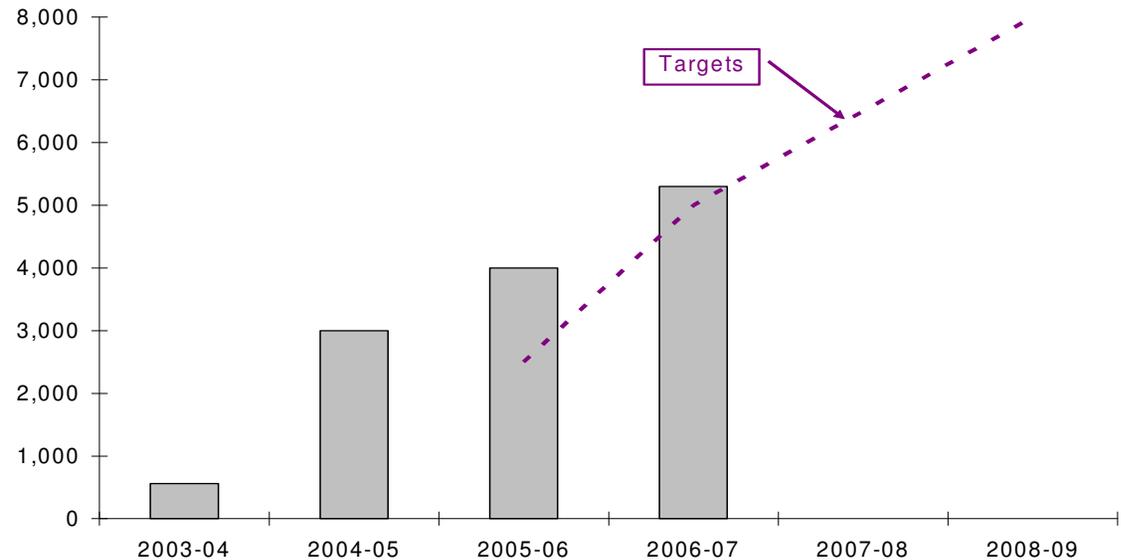
**Budget Activity Links:** A047 - Reduce health and environmental threats from motor vehicle emissions and A051 - Reduce risk from toxic air pollutants.

**Category of Measure:** Output

**Analysis of Variation:** The cumulative nature of the data masks the annual variation, but is acceptable because of the finite nature of the target.

**Analysis of Targeted vs. Actual Performance:** The process seems to be on target to reach the 8,000 vehicle target by the end of the 2007-09 biennium.

**AQ06 - Number of Diesel Vehicles (School Busses, and Public Sector Equipment) Retrofitted with Pollution Control Equipment (Cumulative)**



## Comments About Desirable Characteristics

**Relevance:** Good, and the scope is limited to vehicle fleets over which Ecology can have a measure of influence.

**Understandability:** Good - Normally cumulative data is hard to understand, but in this case, the number of vehicles needing retrofit is known, so summing the number retrofitted each year makes sense.

**Comparability:** The percentage of the known fleet retrofitted might be comparable, but not the number.

**Timeliness:** Data for the most recently completed fiscal year was available at the time of this assessment.

**Reliability:** Is probably susceptible to typical hand count errors like duplication, or missed entries.

**Cost Effectiveness:** This measure is used for many other reporting purposes, including regular reviews of strategic plan performance.

## General Comments & Explanations:

### Agency Comments:

Based upon recommendations, performance and target data will be converted from cumulative to annual.

# Activity Measure Assessment -

**Performance Measure Description:** The 35 microgram per cubic meter federal standard is considered too lax by agency experts. The lower chart is a proposal to measure the same thing, but it tightens the standard to 20 micrograms per cubic meter.

**Budget Activity Links:** A048 - Reduce health and environmental threats from smoke.

**Category of Measure:** Outcome

**Analysis of Variation:** There is a strong likelihood that this measure, like AQ03 is seasonal, with cyclical highs in cold quarters and lows in warm quarters correlating to the use of wood burning heating devices. If so, the data for the 5<sup>th</sup> quarter in 2005-07 seems abnormally high.\*

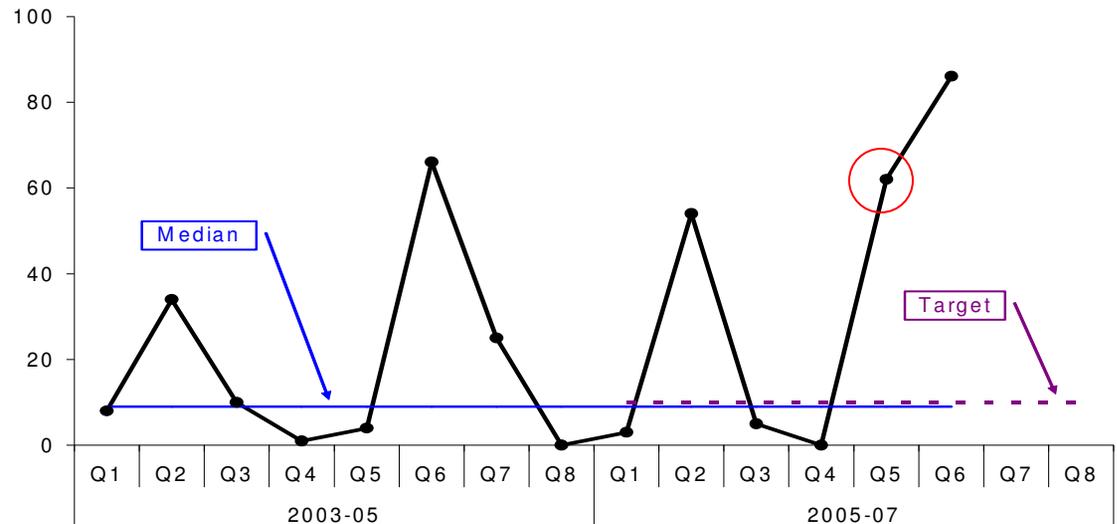
**Analysis of Targeted vs. Actual Performance:** Because of the cyclical nature of this data, during the warm quarters, performance stays below the desired level, but during cold periods, the threshold is always breached.

**Relevance:** Good

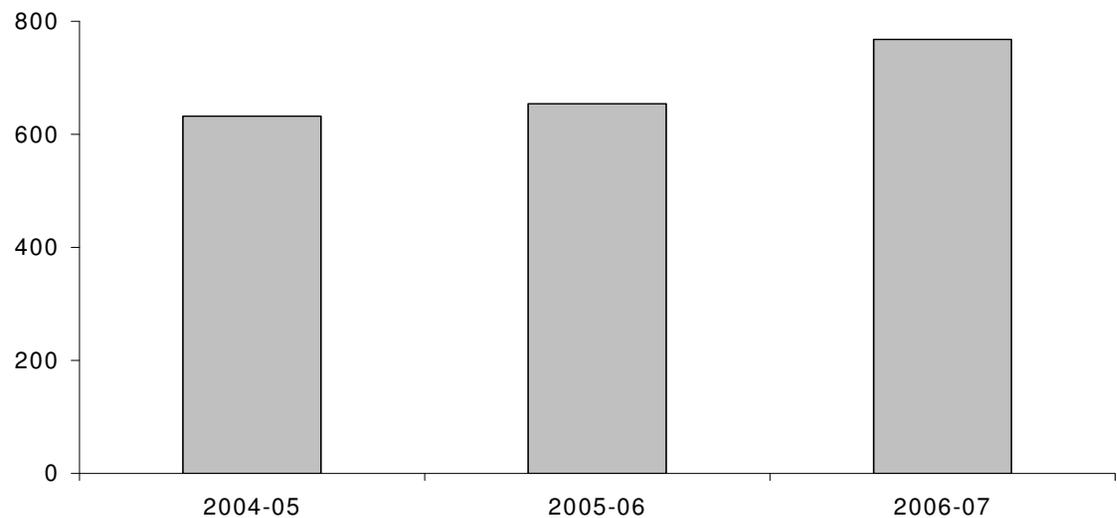
**Understandability:** The title is very technical, but understandable. The seasonal nature of the data would lend itself better to an annual reporting format in PMT.

**General Comments & Explanations:** The increase in measurements over “healthy” levels in 2006-07 is principally due to wildfires and an extended period of electrical blackout from a single storm event in Western Washington resulting in increased burning of wood for heat.

**AQ07 - Number of Times Monitored Particulate Matter Levels, Less than 2.5 Microns, Exceed "Healthy" Levels Statewide (35 ug/cm)**



**AQ07 Proposed - Number of Times Monitored Particulate Matter Levels, Less than 2.5 Microns, Exceed "Healthy" Levels Statewide (20 ug/cm)**



# Activity Measure Assessment - Construction Permit Processing Time

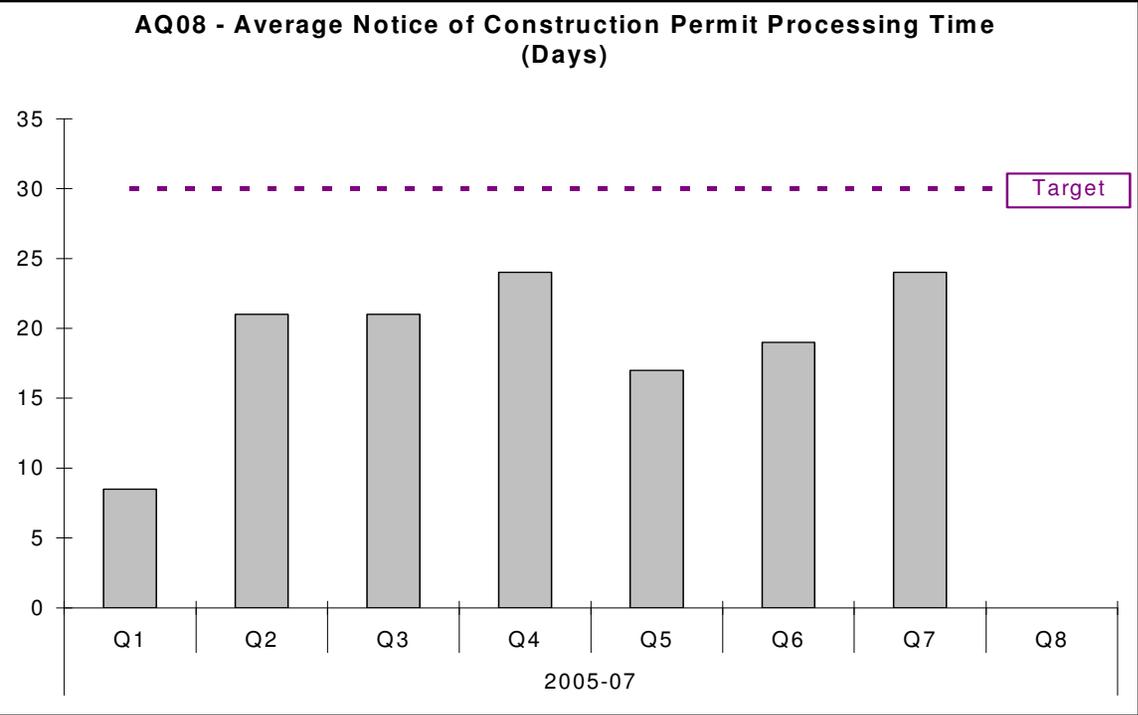
**Performance Measure Description:** Number of days required to finalize a permit from draft status after any required public comment period.

**Budget Activity Links:** A045 - Reduce air pollution from industrial and commercial sources.

**Category of Measure:** How long it takes to do something is a process-level measure.

**Analysis of Variation:** Not enough data for much analysis, but aside from the 1<sup>st</sup> quarter, performance seems to be fairly stable at about 20 days.

**Analysis of Targeted vs. Actual Performance:** The actual performance has exceeded the 30 day target to such a level that the target now appears to be obsolete. The 24-day target for 2007-09 listed in PMT (not shown) seems obsolete too.



## Comments About Desirable Characteristics

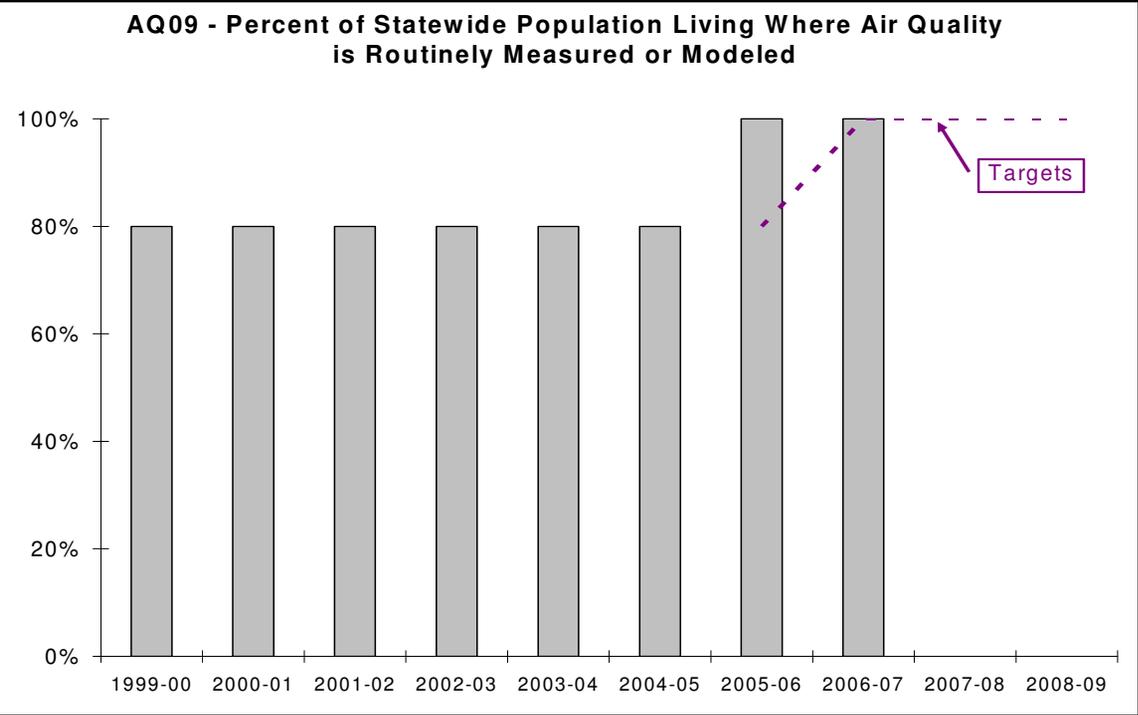
<b>Relevance:</b> The timeliness of the process is very relevant to controlling and enforcing air quality standards.	<b>Timeliness:</b> Data for the most recently completed quarter was not available at the time of this assessment.
<b>Understandability:</b> The phrase, "Notice of Construction" might be the proper name of the permit, but does little to help the reader understand what is being permitted.	<b>Reliability:</b> Should be good since the agency is responsible for the operations of the process.
<b>Comparability:</b> Unknown	<b>Cost Effectiveness:</b> This measure is used for many other reporting purposes, including regular reviews of strategic plan performance.

## General Comments & Explanations:

Agency Comments:  
 Title could be changed to say: "Average Processing Time for Permits to Construct New Facilities or Modify Existing Facilities that Emit Air Pollution."  
 If this change is made it needs to be clear that the performance measure only applies to those facilities falling under the Notice of Construction permit requirement. This could be done in ( ) under the title or in footnotes.

# Activity Measure Assessment - Air Quality Monitoring Coverage

<b>Performance Measure Description:</b> No additional explanation is required.
<b>Budget Activity Links:</b> A025 - Measure air pollution levels and emissions.
<b>Category of Measure:</b> Process-level
<b>Analysis of Variation:</b> There really is no random variation present; Just a jump from 80% to 100%.
<b>Analysis of Targeted vs. Actual Performance:</b> The 100% target for the upcoming biennium has already been achieved.*



Comments About Desirable Characteristics	
<b>Relevance:</b> Getting to 100% was relevant in the past. Now, an outcome measure relating to the benefits of developing this capability is needed.*	<b>Timeliness:</b> Data for the most recently completed fiscal year was available at the time of this assessment.
<b>Understandability:</b> The phrase “routinely measured or modeled” introduces questions like how often is routine, and what percent is measured vs. modeled?	<b>Reliability:</b> Depends on the number of monitoring stations in rural settings where the population density is low.
<b>Comparability:</b> Unknown	<b>Cost Effectiveness:</b> This measure is used for many other reporting purposes, including regular reviews of strategic plan performance.

**General Comments & Explanations:**

\* Barring major population displacements, the utility of this measure has probably eclipsed. A new or existing measure relating to the benefit of having 100% of the population monitored would seem to be appropriate now.

Agency Comment:  
This measure will be replaced with one that measures how well our monitoring data represents local air quality.

# Activity Measure Assessment - Diesel Emissions in Puget Sound Counties

**Performance Measure Description:** The unseen measure that this percent reduction tracks is the tons diesel of emissions per year.

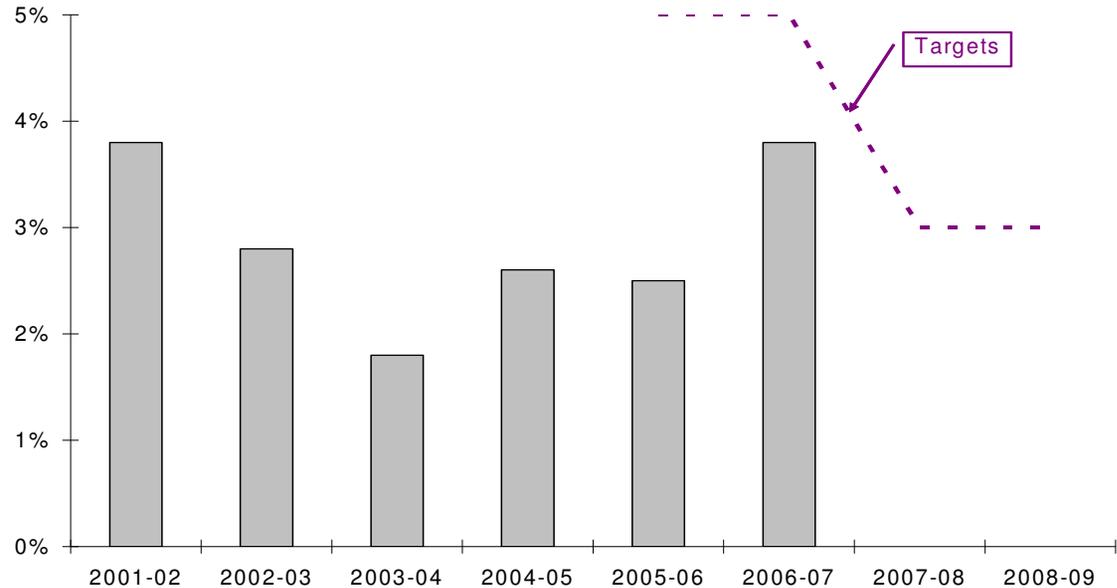
**Budget Activity Links:** A034 - Prevent unhealthy air and violations of air quality standards and A051 - Reduce risk from toxic air pollutants.

**Category of Measure:** Outcome

**Analysis of Variation:** Not enough data for much analysis, but the variation patterns appear to be very stable and predictable.

**Analysis of Targeted vs. Actual Performance:** The 5% reduction target was never reached. The target has been reduced to 3% which should be attainable every now and then.

**AQ10 - Diesel Emissions in Counties Contiguous to Puget Sound are Reduced by 5% (Combined) over the 2002 Baseline**



## Comments About Desirable Characteristics

**Relevance:** Good

**Timeliness:** Data for the most recently completed fiscal year was available at the time of this assessment.

**Understandability:** The measure would be more understandable if it measured the actual amount of diesel emissions in tons per year, instead of the percent reduced from a baseline.\*

**Reliability:** Depends on the operational definition of what emissions are being tested and never changing the baseline year.

**Comparability:** Comparing this to other places would be difficult since the baseline level and year would be different in every location.\*

**Cost Effectiveness:** This measure, in this form, is only used as a report to OFM. Internally, the agency measures this data differently.

## General Comments & Explanations:

\* A more appropriate baseline would be the average of 1990 through 2000 rather than a single point in time of 2002. A single point makes for a poor baseline because it is subject to the ups and downs of normal variation. As a reference point, it could have been higher or lower than its neighboring years for no other reason than chance.

### Agency Comment:

This measure will be converted to actual tons of diesel soot pollution reduced.