

**‘Pool Rewards’****Description**

The ‘Pool Rewards program project by Commuter Connections to encourage current drive alone commuters to try carpooling in the Washington region. If eligible participants can earn \$2 per day (\$1 each way) for each day they carpool to work. The program began as a three month pilot in FY 2010 and is budgeted in the Commuter Connections work program for FY 2011.

**Summary of Impacts (Pilot Program FY10)**

Daily VT Reduction:		VT
Daily VMT Reduction:		VMT
Daily NO <sub>x</sub> Reductions:		tons/day
Daily VOC Reductions:		tons/day
Annual PM <sub>2.5</sub> Reductions:		tons/year
Annual precursor NO <sub>x</sub> Reductions:		tons/year
Annual CO <sub>2</sub> Reductions		tons/year
Cost Effectiveness (NO <sub>x</sub> )		\$/ton
Cost Effectiveness (VOC)		\$/ton
Cost Effectiveness (PM <sub>2.5</sub> )		\$/ton
Cost Effectiveness (precursor-NO <sub>x</sub> )		\$/ton
Cost Effectiveness (CO <sub>2</sub> )		\$/ton

**Summary of Potential Impacts (FY11)**

Daily VT Reduction:	298	VT
Daily VMT Reduction:	9,296	VMT
Daily NO <sub>x</sub> Reductions:	0.0041	tons/day
Daily VOC Reductions:	0.0022	tons/day
Annual PM <sub>2.5</sub> Reductions:	0.0300	tons/year
Annual precursor NO <sub>x</sub> Reductions:	1.0302	tons/year
Annual CO <sub>2</sub> Reductions	1,183	tons/year
Cost Effectiveness (NO <sub>x</sub> )	185,556	\$/ton
Cost Effectiveness (VOC)	352,183	\$/ton
Cost Effectiveness (PM <sub>2.5</sub> )	6,339,373	\$/ton
Cost Effectiveness (precursor-NO <sub>x</sub> )	184,435	\$/ton
Cost Effectiveness (CO <sub>2</sub> )	161	\$/ton

## Assumptions

### **Pilot Program (FY10)**

- Sketch planning is used as an analysis tool
- 90-day pilot program (64 weekdays)
- Each trip recorded as a “passenger trip” is a vehicle-trip and VMT reduced because of the program
- Cost effectiveness is calculated based on the actual FY 2010 costs.
- The trip length is the actual trip length for participants based on their home and office locations

### **Potential Impacts (FY11)**

- Sketch planning is used as an analysis tool
- Analysis assumes that all of the money budgeted for incentives is distributed (ie 130,000 one-way trips taken)
- The percentage of passenger trips (trips reduced) is based on the data from the pilot program (57%).
- The average trip length is based on the pilot program (31.1 miles)

## Emission Analysis (2010)

### **Pilot Program (FY10)**

Decrease in daily auto trips due to Pool Rewards (logged “passenger” trips): 79 trips/day  
Daily VMT reduction (based on participants’ home and work locations): 2217 miles/day

### **Potential Impacts (FY11)**

Decrease in daily auto trips due to Pool Rewards (based on logged “passenger” trips percentage from the pilot program): 298 trips/day  
Daily VMT reduction (based on participants’ home and work locations): 9296 miles/day

## Potential FY11 Daily Emissions Reductions

### NOx Estimation

Cold Start	298	x	$\frac{0.5811 \text{ grams}}{1 \text{ trip}}$	x	$\frac{1 \text{ ton}}{907,185 \text{ grams}}$	=	0.0002	tons
Running	9296	x	$\frac{0.3811 \text{ grams}}{1 \text{ mile}}$	x	$\frac{1 \text{ ton}}{907185 \text{ grams}}$	=	0.0039	tons
					Total		0.0041	tons

### VOC Estimation

Cold Start	298	x	$\frac{0.9599 \text{ grams}}{1 \text{ trip}}$	x	$\frac{1 \text{ ton}}{907,185 \text{ grams}}$	=	0.0003	tons
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			1 trip		907,185 grams			
Running	9296	x	$\frac{0.1617 \text{ grams}}{1 \text{ mile}}$	x	$\frac{1 \text{ ton}}{907185 \text{ grams}}$	=	0.0017	tons
Hot Soak	298	x	$\frac{0.5661 \text{ grams}}{1 \text{ trip}}$	x	$\frac{1 \text{ ton}}{907185 \text{ grams}}$	=	0.0002	tons
					Total		0.0022	tons

**Potential FY11 Annual Emissions Reductions**

PM2.5 Estimation

Running	9296	x	$\frac{0.0117 \text{ grams}}{1 \text{ mile}}$	x	$\frac{1 \text{ ton}}{907185 \text{ grams}}$	x 250	=	0.0300	tons
					Total			0.0300	tons

Precursor NOx Estimation

Cold Start	298	x	$\frac{0.6132 \text{ grams}}{1 \text{ trip}}$	x	$\frac{1 \text{ ton}}{907,185 \text{ grams}}$	x 250	=	0.0503	tons
Running	9296	x	$\frac{0.3825 \text{ grams}}{1 \text{ mile}}$	x	$\frac{1 \text{ ton}}{907185 \text{ grams}}$	x 250	=	0.9798	tons
					Total			1.0302	tons

CO2 Estimation

Running	9296	x	$\frac{461.7 \text{ grams}}{1 \text{ mile}}$	x	$\frac{1 \text{ ton}}{907185 \text{ grams}}$	x 250	=	1,183	tons
					Total			1,183	tons

**Cost Assumptions**

Each carpool trip taken (either as a driver or passenger) receives \$1, or \$2 per person per day for each trip correctly logged.

The total amount expended for the 'Pool Rewards project in FY 2010 was \$94,899 and \$6,509 of that was for the incentive payments. The rest was for marketing and advertising (\$65,772) and administrative costs (\$22,618). The amount of payment incentives is less than the total trips because not all of the trips were properly logged.

The total amount budgeted for 'Pool Rewards project in FY 2011 is \$190,000 with \$130,000 of that for incentive payments. The cost effectiveness assumes that the maximum number of one-way trips equals the total amount budgeted for incentives.

**Cost Effectiveness**

**Pilot Program –FY 2010**

Cost effectiveness NOx	$\frac{\$94,899}{0.0632}$	=	1,502,475.11	\$/ton
Cost effectiveness VOC	$\frac{\$94,899}{0.0340}$	=	2,788,782.28	\$/ton
Cost effectiveness PM2.5	$\frac{\$94,899}{0.0018}$	=	51,623,236.63	\$/ton
Cost effectiveness Precursor NOx	$\frac{\$94,899}{0.0636}$	=	1,492,988.26	\$/ton
Cost effectiveness CO2	$\frac{\$94,899}{72.54}$	=	1,308.19	\$/ton

**Potential Impacts – FY 2011**

Cost effectiveness NOx	$\frac{\$190,000}{250 \times 0.0041}$	=	185,556	\$/ton
Cost effectiveness VOC	$\frac{\$190,000}{250 \times 0.0022}$	=	352,183	\$/ton
Cost effectiveness PM2.5	$\frac{\$190,000}{0.0300}$	=	6,339,373	\$/ton
Cost effectiveness Precursor NOx	$\frac{\$190,000}{1.0302}$	=	184,435	\$/ton
Cost effectiveness CO2	$\frac{\$190,000}{1,183}$	=	161	\$/ton