



# Reasonable Further Progress Preliminary Results

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# Reasonable Further Progress (RFP) - Basics

## Need for RFP Plan

- Washington region - Currently classified as Marginal nonattainment area for the 2008 8-hour ozone standard (75 ppb).
- In case the region is not able to attain the standard by December 31, 2015, EPA may reclassify it as Moderate nonattainment area.
- Moderate NAA – Need to submit a Reasonable Further Progress (RFP) plan. Plan needs to be submitted shortly after redesignation to the moderate classification.
- State air agencies have decided to develop a RFP plan in advance in anticipation of a possible reclassification (bump-up) to the Moderate designation.



# Components of RFP Plan

## A. RFP Milestone Years & Emissions Reduction Requirements

- Base Year: 2011
- RFP Emissions Reduction Period (6 Years): 2011 – 2017
- RFP Emissions Reduction Requirements: 15% VOC emission reduction from base year during 2011 – 2017
- NOx Substitution: NOx can be substituted for VOC to achieve a total of 15% reduction. (e.g., 10% VOC reduction & 5% NOx reduction).

## B. Restrictions on Control Measures to Meet RFP Requirements

- Benefits from Federal Motor Vehicle Control Program tailpipe and evaporative standards applicable as of January 1, 1990
- Benefits from federal regulations limiting the Reid Vapor Pressure (RVP) of gasoline in ozone nonattainment areas applicable as of June 15, 1990



# Development of 2011 & 2017 Emissions

## A. Base Year 2011 Emissions

- Base Year 2011 emissions inventory effort - Ozone season day VOC & NO<sub>x</sub> emissions

## B. 15% RFP Milestone Year 2017 Emissions

- Point Source – DC & VA provided 2017 emissions, MD (BY2011 emissions used)
- Area & Marine, Airport, Railroad Sources –
  - Growth surrogates – MARAMA surrogates as starting point
  - Growth Factors - Latest Annual Energy Outlook 2014, COG Co-operative forecast Round 8.2 for population, household, and employment, VMT projections
  - Control Factors – MARAMA CFs for portable fuel container and a few other sources, reduced VRE commuter rail emissions
- Nonroad Sources (NMIM) –
  - Projected 2017 emissions for other nonroad sources using NMIM model
- Onroad Sources –
  - Projected 2017 onroad MOVES2010a emissions (2013 CLRP)
  - No adjustment for non-creditable emissions



# VOC Emission Reductions

Jurisdiction	Point <sup>a</sup>			Area			NMIM Model			MAR			Nonroad (Total)			Onroad*			Total*		
	2011	2017	Diff	2011	2017	Diff	2011	2017	Diff	2011	2017	Diff	2011	2017	Diff	2011	2017	Diff	2011	2017	Diff
<b>District of Columbia</b>	<b>0.19</b>	<b>0.19</b>	<b>0.00</b>	<b>12.98</b>	<b>13.06</b>	<b>-0.08</b>	<b>5.28</b>	<b>3.33</b>	<b>1.95</b>	<b>0.23</b>	<b>0.18</b>	<b>0.05</b>	<b>5.51</b>	<b>3.52</b>	<b>2.00</b>	<b>6.91</b>	<b>4.21</b>	<b>2.70</b>	<b>25.59</b>	<b>20.98</b>	<b>4.61</b>
Calvert	0.07	0.07	0.00	2.09	2.01	0.09	2.56	1.57	0.99	0.09	0.07	0.02	2.64	1.63	1.01	2.06	1.58	0.49	6.88	5.29	1.59
Charles	0.76	0.76	0.00	3.78	3.92	-0.14	4.22	2.72	1.50	0.04	0.04	0.00	4.26	2.76	1.50	3.24	2.32	0.93	12.04	9.76	2.29
Fredrick	0.49	0.49	0.00	6.59	6.43	0.16	4.27	3.17	1.10	0.22	0.21	0.01	4.49	3.38	1.11	6.05	4.14	1.91	17.61	14.44	3.18
Montgomery	0.36	0.36	0.00	23.03	22.74	0.29	14.37	10.76	3.61	0.09	0.06	0.03	14.46	10.82	3.64	14.42	9.09	5.33	52.27	43.01	9.27
Prince Georges's	1.34	1.34	0.00	20.24	19.63	0.61	9.18	6.61	2.57	0.24	0.20	0.04	9.41	6.80	2.61	16.55	9.93	6.62	47.55	37.71	9.84
<b>Maryland Total</b>	<b>3.02</b>	<b>3.02</b>	<b>0.00</b>	<b>55.73</b>	<b>54.73</b>	<b>1.00</b>	<b>34.59</b>	<b>24.81</b>	<b>9.78</b>	<b>0.68</b>	<b>0.58</b>	<b>0.10</b>	<b>35.27</b>	<b>25.39</b>	<b>9.88</b>	<b>42.33</b>	<b>27.05</b>	<b>15.28</b>	<b>136.36</b>	<b>110.19</b>	<b>26.16</b>
Arlington	0.07			5.50	5.32	0.19	1.58	1.12	0.46	0.57	0.59	-0.01	2.15	1.71	0.45	2.54	1.54	1.00	10.26	8.56	1.70
Fairfax	1.37			30.55	30.22	0.33	13.85	10.52	3.33	0.06	0.04	0.03	13.92	10.56	3.36	16.48	10.38	6.10	62.31	51.16	11.16
Fairfax City	0.36			1.20	1.15	0.06	0.42	0.12	0.30	-	-	0.00	0.42	0.12	0.30	-	-	0.00	1.99	1.27	0.72
Falls Church City	0.00			0.43	0.42	0.01	0.25	0.06	0.18	-	-	0.00	0.25	0.06	0.18	-	-	0.00	0.68	0.48	0.20
Loudoun	1.02			9.50	10.18	-0.68	6.05	4.80	1.25	0.76	0.91	-0.14	6.82	5.71	1.11	4.90	3.35	1.56	22.24	19.24	3.00
Prince William	0.73	0.07	0.66	13.10	13.87	-0.77	4.81	3.58	1.23	0.04	0.02	0.02	4.85	3.60	1.25	7.34	4.82	2.52	26.02	22.36	3.65
Manassas City	0.14			1.31	1.31	0.01	0.23	0.10	0.13	0.02	0.02	0.00	0.25	0.13	0.13	-	-	0.00	1.71	1.43	0.27
Manassas Park City	-			0.44	0.43	0.02	0.23	0.06	0.17	0.00	0.00	0.00	0.23	0.06	0.17	-	-	0.00	0.67	0.49	0.18
Alexandria	0.06			4.11	4.18	-0.07	1.10	0.28	0.82	0.02	0.01	0.01	1.12	0.29	0.83	1.85	1.13	0.72	7.15	5.60	1.54
<b>Virginia Total</b>	<b>3.75</b>	<b>0.07</b>	<b>3.69</b>	<b>66.15</b>	<b>67.07</b>	<b>-0.92</b>	<b>28.53</b>	<b>20.65</b>	<b>7.88</b>	<b>1.49</b>	<b>1.59</b>	<b>-0.10</b>	<b>30.02</b>	<b>22.24</b>	<b>7.78</b>	<b>33.10</b>	<b>21.22</b>	<b>11.89</b>	<b>133.03</b>	<b>110.60</b>	<b>22.43</b>
<b>Washington, DC-MD-VA Ozone NAA Total</b>	<b>7</b>	<b>3</b>	<b>3.68</b>	<b>135</b>	<b>135</b>	<b>-0.01</b>	<b>68</b>	<b>49</b>	<b>19.60</b>	<b>2.40</b>	<b>2.35</b>	<b>0.05</b>	<b>71</b>	<b>51</b>	<b>19.65</b>	<b>82</b>	<b>53</b>	<b>29.85</b>	<b>294.98</b>	<b>241.80</b>	<b>53.18</b>

## VOC RFP Emission Reductions (2011-2017): 18%

\* Onroad emissions for Fairfax county includes emissions for Fairfax city & Falls Church city and emissions for prince William county includes emissions

<sup>a</sup>MD point source emissions for 2017 were assumed to be the same as 2011. Need to be updated.



# NOx Emission Reductions

Jurisdiction	Point			Area			NMIM Model			MAR			Nonroad (Total)			Onroad*			Total*		
	2011	2017	Diff	2011	2017	Diff	2011	2017	Diff	2011	2017	Diff	2011	2017	Diff	2011	2017	Diff	2011	2017	Diff
<b>District of Columbia</b>	<b>1.39</b>	<b>1.13</b>	<b>0.27</b>	<b>0.01</b>	<b>0.00</b>	<b>0.00</b>	<b>7.52</b>	<b>4.88</b>	<b>2.64</b>	<b>3.01</b>	<b>1.74</b>	<b>1.26</b>	<b>10.53</b>	<b>6.62</b>	<b>3.90</b>	<b>15.79</b>	<b>8.30</b>	<b>7.48</b>	<b>27.71</b>	<b>16.06</b>	<b>11.65</b>
Calvert	1.28	1.28	0.00	0.06	0.06	0.00	1.51	1.22	0.30	2.54	1.28	1.26	4.05	2.50	1.55	4.02	2.50	1.52	9.41	6.34	3.07
Charles	28.15	28.15	0.00	0.16	0.17	0.00	2.64	2.01	0.63	0.08	0.05	0.03	2.72	2.06	0.66	7.15	4.26	2.89	38.19	34.64	3.55
Fredrick	0.68	0.68	0.00	0.16	0.16	0.00	3.57	2.42	1.15	1.25	0.72	0.53	4.82	3.13	1.69	18.54	10.59	7.95	24.20	14.56	9.63
Montgomery	14.53	14.53	0.00	0.04	0.04	0.00	8.87	6.08	2.79	0.96	0.50	0.47	9.83	6.57	3.26	34.19	18.03	16.16	58.59	39.18	19.41
Prince Georges's	50.05	50.05	0.00	0.08	0.08	0.00	7.78	5.18	2.60	1.17	0.74	0.43	8.95	5.93	3.02	43.75	22.97	20.78	102.83	79.03	23.80
<b>Maryland Total</b>	<b>94.70</b>	<b>94.70</b>	<b>0.00</b>	<b>0.50</b>	<b>0.51</b>	<b>0.00</b>	<b>24.37</b>	<b>16.90</b>	<b>7.46</b>	<b>6.00</b>	<b>3.29</b>	<b>2.72</b>	<b>30.37</b>	<b>20.19</b>	<b>10.18</b>	<b>107.65</b>	<b>58.36</b>	<b>49.30</b>	<b>233.23</b>	<b>173.75</b>	<b>59.48</b>
Arlington	0.87			0.09	0.09	0.00	3.41	2.16	1.26	3.73	3.80	-0.07	7.14	5.96	1.18	4.98	2.59	2.39	13.09	8.64	4.44
Fairfax	18.83			0.89	0.86	0.02	9.34	6.31	3.02	0.99	0.29	0.70	10.32	6.60	3.72	40.92	21.45	19.48	70.96	28.91	42.06
Fairfax City	0.04			0.02	0.02	0.00	0.16	0.12	0.04	0.00	0.00	0.00	0.16	0.12	0.04	-	-	0.00	0.21	0.14	0.08
Falls Church City	0.01			0.01	0.01	0.00	0.09	0.06	0.02	0.00	0.00	0.00	0.09	0.06	0.02	-	-	0.00	0.10	0.07	0.03
Loudoun	10.02			0.37	0.36	0.01	6.88	4.50	2.38	5.20	6.38	-1.18	12.08	10.88	1.20	13.57	7.53	6.04	36.03	18.77	17.26
Prince William	12.96	11.29	1.67	0.32	0.32	0.00	4.52	2.98	1.54	0.80	0.22	0.58	5.31	3.19	2.12	18.77	10.28	8.49	37.37	25.09	12.28
Manassas City	1.03			0.05	0.05	0.00	0.17	0.10	0.07	0.04	0.02	0.02	0.21	0.12	0.09	-	-	0.00	1.29	0.17	1.12
Manassas Park City	-			0.01	0.01	0.00	0.08	0.06	0.02	0.00	0.00	0.00	0.09	0.06	0.03	-	-	0.00	0.10	0.08	0.03
Alexandria	11.74			0.12	0.12	0.00	0.39	0.28	0.11	0.39	0.10	0.29	0.78	0.38	0.40	3.79	2.01	1.78	16.43	2.51	13.91
<b>Virginia Total</b>	<b>55.48</b>	<b>11.29</b>	<b>44.19</b>	<b>1.88</b>	<b>1.84</b>	<b>0.04</b>	<b>25.03</b>	<b>16.57</b>	<b>8.46</b>	<b>11.15</b>	<b>10.81</b>	<b>0.34</b>	<b>36.18</b>	<b>27.38</b>	<b>8.80</b>	<b>82.04</b>	<b>43.87</b>	<b>38.17</b>	<b>175.58</b>	<b>84.38</b>	<b>91.21</b>
<b>Washington, DC-MD-VA Ozone NAA Total</b>	<b>152</b>	<b>107</b>	<b>44.46</b>	<b>2</b>	<b>2</b>	<b>0.04</b>	<b>57</b>	<b>38</b>	<b>18.57</b>	<b>20.16</b>	<b>15.84</b>	<b>4.32</b>	<b>77</b>	<b>54</b>	<b>22.89</b>	<b>205</b>	<b>111</b>	<b>94.98</b>	<b>436.52</b>	<b>274.16</b>	<b>162.36</b>

## NOx RFP Emission Reductions (2011-2017): 37%

\* Onroad emissions for Fairfax county includes emissions for Fairfax city & Falls Church city and emissions for prince William county includes emissions

<sup>a</sup>MD point source emissions for 2017 were assumed to be the same as 2011. Need to be updated.



## RFP Emissions Reductions

RFP Reduction	NOx	37%
RFP Reduction	VOC	18%
<b>RFP Reduction</b>	<b>Total</b>	<b>55%</b>

- Washington region meets the 15% emissions reduction requirement for RFP based on preliminary results and a few caveats.