



# Regional Renewable Energy Study Review of Draft Findings

Presented to:

**Built Environment and Energy Advisory Committee  
Metropolitan Washington Council of Governments**

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# Renewable Energy Study Scope

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- **Supplemental Analysis from Multi-Sector Approach to Reducing GHG Emissions**
- **Refine “10% Renewable Energy Goal”**
  - Document goal in terms of total MWh, by sector and by MWCOG jurisdiction, and roll up to summaries for Virginia, Maryland, and the District of Columbia
  - Estimate equivalent renewable energy deployment needed to reach the goal – specifically solar PV capacity, and number of systems, along with other viable technologies, as appropriate
- **Provide additional analysis of renewable energy issues with comparisons that are easy to explain and understand.**
  - Document regional desire and opportunities for green power purchasing
  - Explain constraints and their impact
  - Compare potential with existing goals and external examples (e.g., from related regional goals and accomplishments from across the country)
  - Provide assumptions and calculations for renewable energy penetration and potential

# Project Approach & Tasks

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- Provide additional support and analysis to build confidence in the current goal to achieve “10% of regional electricity consumption from renewable sources” for regional leaders and stakeholders. Include data sources to inform future MWCOG goal setting, planned actions, and tracking of renewable energy deployment.
  
- Investigate and analyze, at a summary level, regional drivers for renewable energy implementation including:
  - ✓ Current adoption trends and forecasts
  - ✓ Existing renewable potential studies from MWCOG members, as available
  - ✓ Regional green power purchases, as available
  - ✓ Electric utility integrated resource plans
  - ✓ Revisit sector potential for Institutional (government agency & non-profit), Commercial, Residential, Utility
  - ⋮ Regional constraints to deployment including economic, policy and technical
  - ⋮ Regional opportunities and co-benefits
  - ⋮ Potential for solar hot water adoption at meaningful scale

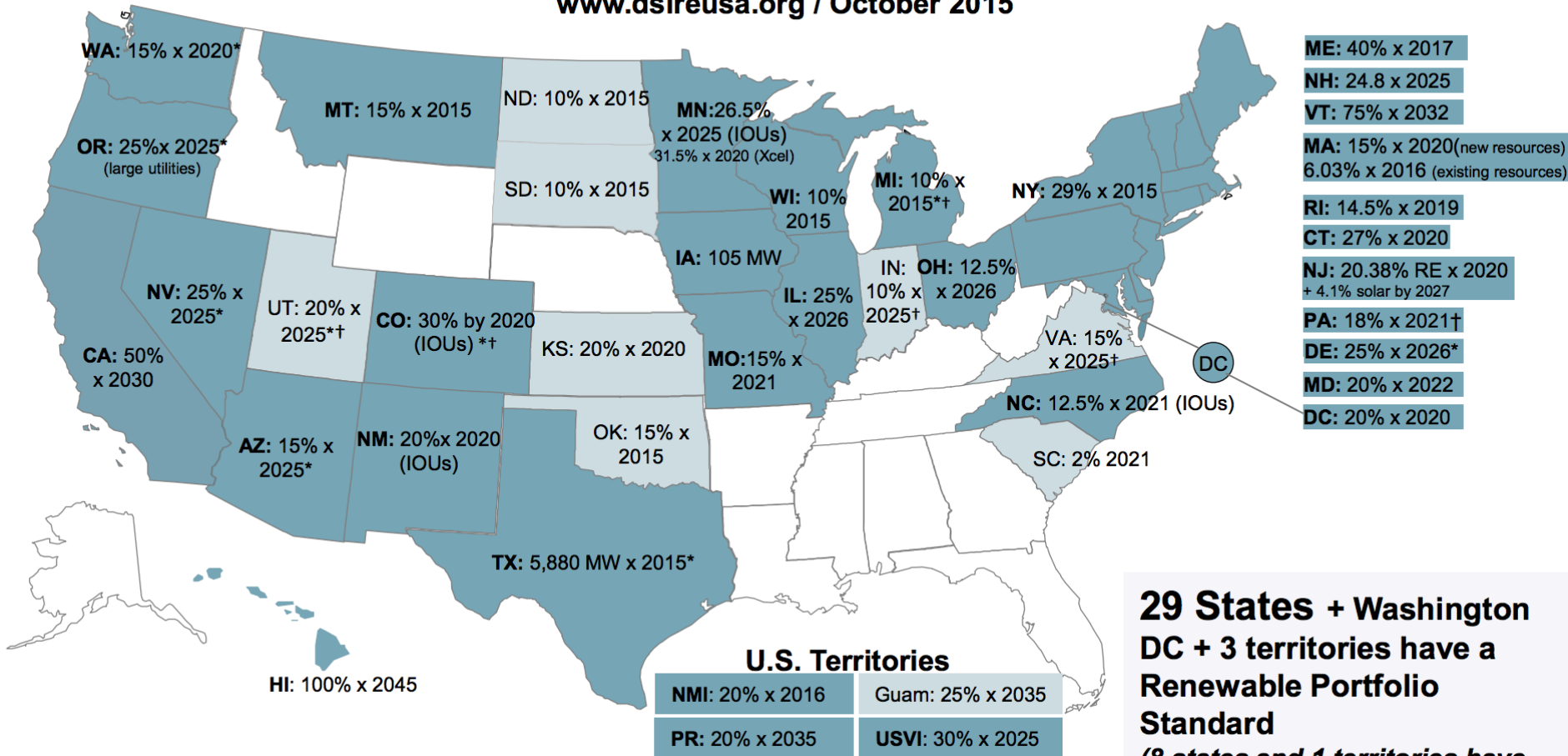
# Top-Line Goal

- 2012 Total Electricity Usage by Jurisdiction (from MWCOG)
- Target: 10% of 2012 Electricity Sourced from Renewable Energy (RE) [~6,000 GWh]
- Sources to be included for RE target: On-site renewables + Off-site renewables + RECs

JURISDICTION		TOTAL KWH USAGE	
		2005	2012
MD	Montgomery County	10,348,986,387	9,264,634,701
MD	Prince Georges County	6,095,019,444	7,406,153,004
MD	Frederick County	5,846,364,723	2,972,379,345
MD	Charles County	1,352,991,067	1,332,500,859
VA	Alexandria	1,747,945,750	1,757,052,807
VA	Arlington	3,097,359,329	3,241,416,881
VA	Fairfax City	327,884,768	306,084,682
VA	Fairfax County	12,148,492,539	13,050,307,311
VA	Falls Church	125,718,688	131,486,413
VA	Loudoun County	2,442,478,150	5,115,753,311
VA	Manassas City	638,103,464	813,364,269
VA	Manassas Park	70,746,318	80,545,159
VA	Prince William County	2,946,733,509	3,825,402,395
DC	Washington	11,735,691,057	10,878,440,707
<b>TOTAL</b>		<b>58,924,515,193</b>	<b>60,175,521,844</b>
<b>10% Renewable Energy Target (Annual kWh)</b>			<b>6,017,552,184</b>

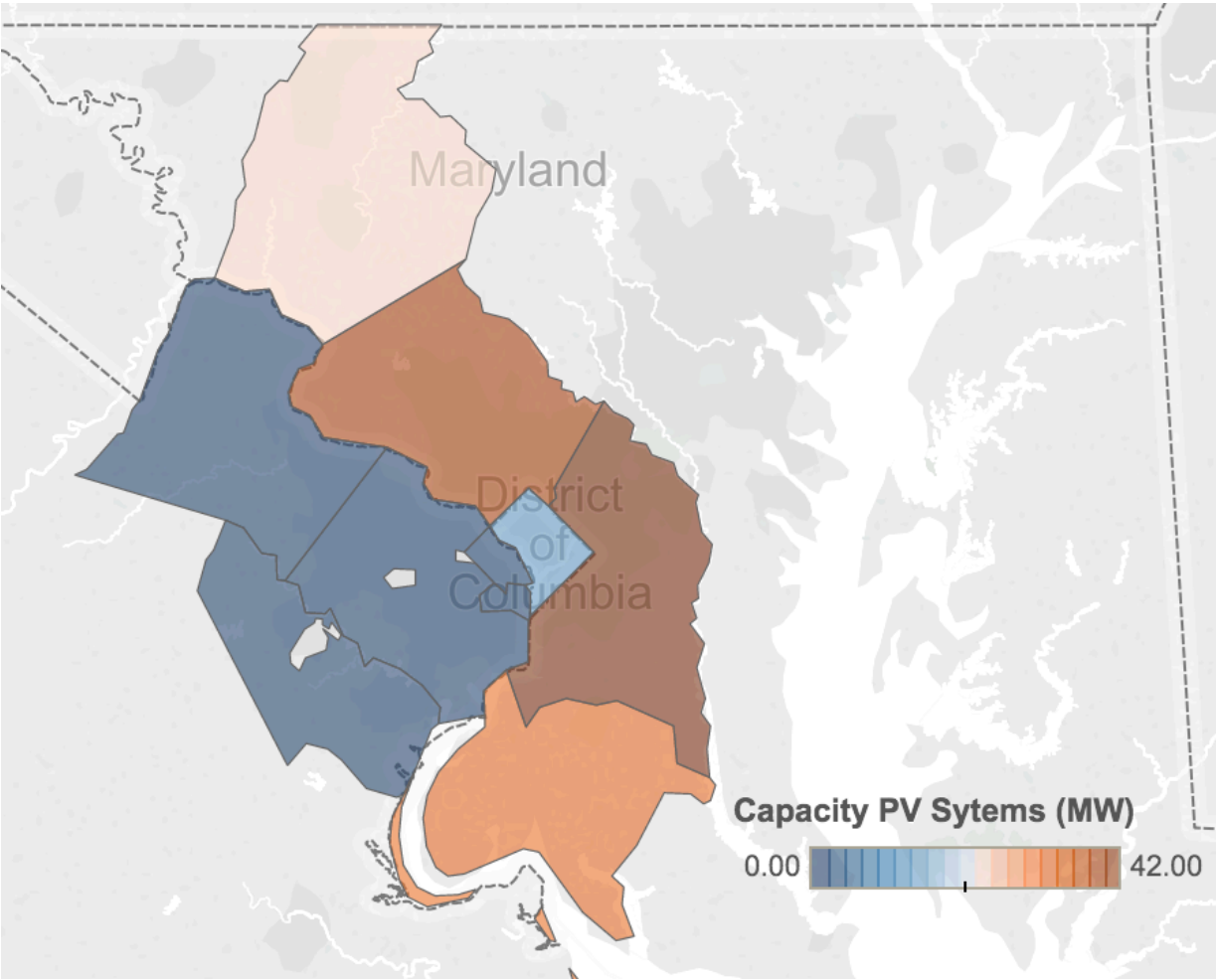
## Renewable Portfolio Standard Policies

www.dsireusa.org / October 2015



**29 States + Washington DC + 3 territories have a Renewable Portfolio Standard**  
*(8 states and 1 territories have renewable portfolio goals)*

# 2015 Regional Solar PV Deployment by County



Total installed solar PV as of 12/31/15

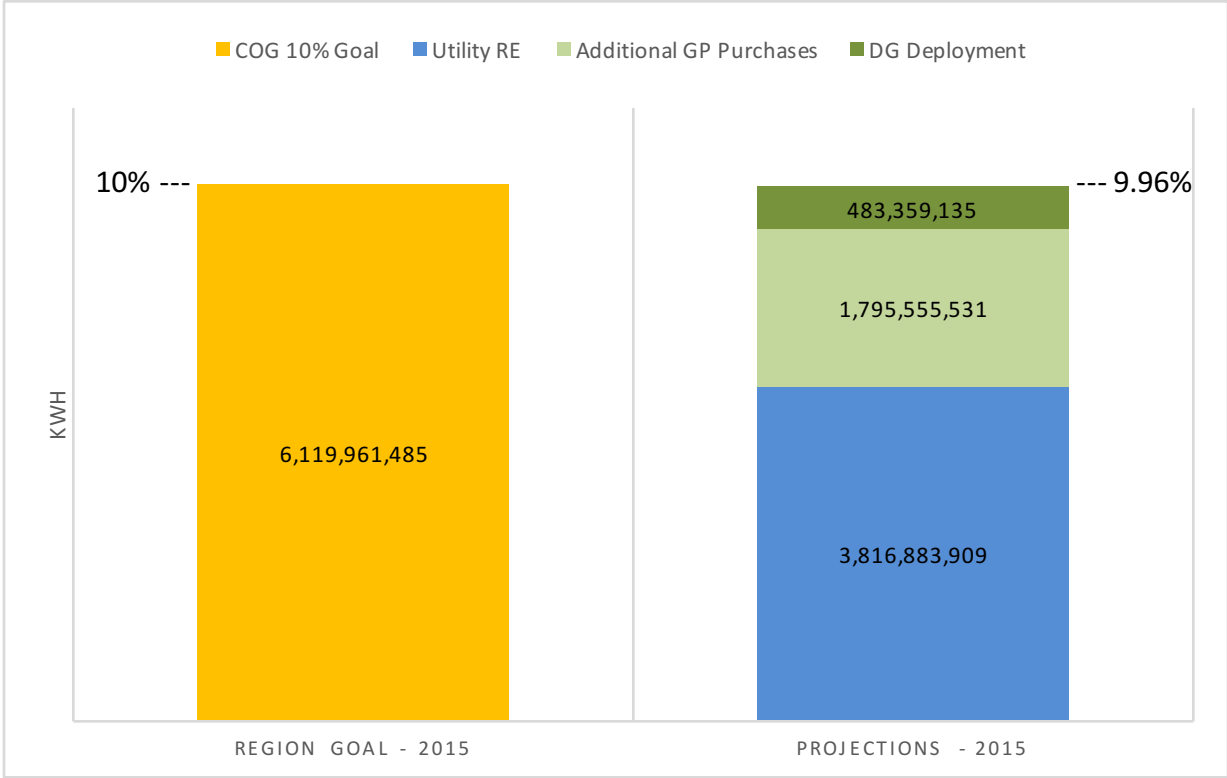
Source: Northern Virginia Regional Commission, April 7, 2016

# Renewable Energy Forecast Updates

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- Aggregated purchasing programs – Updated based on recent changes in availability of ITC and current trends. Includes residential, commercial and government.
- Community Solar – Added this category to the analysis based on the high level of interest and potential for this type of deployment. Includes residential and commercial.
- Incentives – Updated based on current trends. This includes Property Tax Abatements, Density Allowances, and Permit Fee Reductions only.
- Ongoing Distributed Generation Deployment – Updated based on current trends.
- Green Power Purchases – Worked with EPA GPP program to pull in data from the Capital Region. Removed “on-site” solar to avoid potential for double counting.

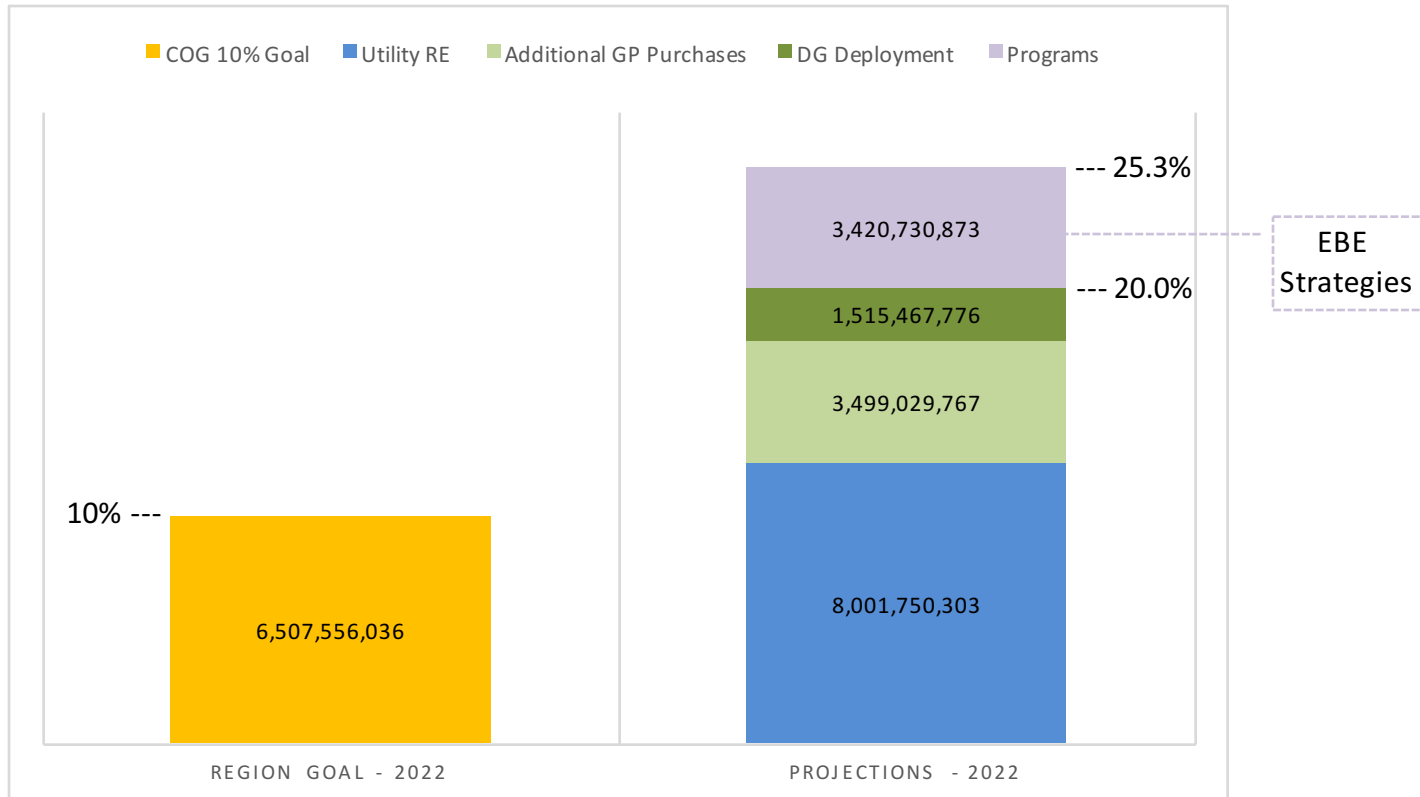
# 2015 Renewable Energy Analysis Summary



- Overall regional renewable energy consumption at nearly 10% of total in 2015
- Utility supplied non-hydro renewable energy represents over 6% of regional consumption
- Customer voluntary Green Purchases estimated at almost 3% (via EPA Green Power Partnership)
- Distributed generation (primarily solar) estimated at 0.8% (via MWCOG data)



# 2022 Renewable Energy Forecast Summary



- Overall regional renewable energy consumption forecast at over 25% of total in 2022
- Utility supplied non-hydro renewable energy represents over 12% of regional consumption
- Customer voluntary Green Purchases estimated at over 5% (via EPA Green Power Partnership)
- Distributed generation (primarily solar) estimated at 2.3% (via MWCOG data)
- Additional regional strategies could potentially contribute 5% more clean power consumption

# 2015 Renewable Energy Analysis By MWCOG Jurisdiction

Annual kWh

State	Jurisdiction	Projected Consumption	10% RE Goal	Utility Supplied RE w/o Large Hydro	Customer Voluntary Green Power Purchases	DG Deployment	Total Projected RE	Total Projected RE (%)
MD	Montgomery County	8,776,781,240	877,678,124	921,562,030	669,554,991	157,422,720	1,748,539,741	19.9%
MD	Prince Georges County	8,088,534,354	808,853,435	849,296,107	139,371,154	82,901,520	1,071,568,781	13.2%
MD	Frederick County	3,103,963,670	310,396,367	325,916,185	104,000	51,342,720	377,362,905	12.2%
MD	Charles County	1,330,563,409	133,056,341	139,709,158	0	40,138,020	179,847,178	13.5%
VA	Alexandria	1,752,330,240	175,233,024	24,721,215	8,096,592	409,082	33,226,889	1.9%
VA	Arlington	3,277,198,283	327,719,828	46,233,480	31,328,765	524,043	78,086,288	2.4%
VA	Fairfax City	294,904,291	29,490,429	4,160,399	0	0	4,160,399	1.4%
VA	Fairfax County	13,392,109,644	1,339,210,964	201,202,248	15,549,640	114,199,570	330,951,458	2.5%
VA	Falls Church	131,793,940	13,179,394	1,859,299	558,000	101,524	2,518,823	1.9%
VA	Loudoun County	5,602,415,793	560,241,579	91,948,301	269,684	2,194,710	94,412,695	1.7%
VA	Manassas City	767,937,731	76,793,773	26,760,269	0	62,706	26,822,975	3.5%
VA	Manassas Park	78,619,236	7,861,924	2,739,639	0	0	2,739,639	3.5%
VA	Prince William County	4,071,807,941	407,180,794	106,648,761	0	10,421,140	117,069,901	2.9%
DC	Washington	10,530,655,076	1,053,065,508	1,074,126,818	930,722,705	23,641,380	2,028,490,902	19.3%
	<b>TOTAL</b>	<b>61,199,614,848</b>	<b>6,119,961,485</b>	<b>3,816,883,909</b>	<b>1,795,555,531</b>	<b>483,359,135</b>	<b>6,095,798,575</b>	<b>10.0%</b>
				6.2%	2.9%	0.8%		

# PJM Renewable Energy Supply Mix - 2015

Fuel Type	Share of Renewables
Wind	48.9%
Hydro - Conventional	24.1%
Solid Waste - Municipal Solid Waste	12.3%
Captured Methane - Landfill	7.0%
Wood - Wood/Wood Waste	4.6%
Solar - Photovoltaic	1.6%
Wood - Black Liquor	1.0%
Solid Waste - Tire Derived	0.3%
Captured Methane - Coal	0.2%
Biomass - Other Biomass Gases & Liquids	0.0%
<b>Total</b>	<b>100.0%</b>

# 2022 Renewable Energy Forecast By MWCOG Jurisdiction

Annual kWh

State	Jurisdiction	Projected Consumption	10% RE Goal	Utility Supplied RE w/o Large Hydro	Customer Voluntary Green Power Purchases	DG Deployment	Programs	Total Projected RE	Total Projected RE (%)
MD	Montgomery County	7,738,754,877	773,875,488	1,547,750,975	1,304,773,260	493,564,809	498,283,011	3,844,372,056	49.7%
MD	Prince Georges County	10,021,135,833	1,002,113,583	2,004,227,167	271,594,951	259,919,743	552,690,609	3,088,432,469	30.8%
MD	Frederick County	3,544,366,603	354,436,660	708,873,321	202,667	160,973,967	210,394,562	1,080,444,517	30.5%
MD	Charles County	1,326,055,388	132,605,539	265,211,078	0	125,844,060	72,111,263	463,166,401	34.9%
VA	Alexandria	1,745,569,597	174,556,960	65,997,048	15,777,967	1,282,588	86,178,954	169,236,557	9.7%
VA	Arlington	3,366,329,884	336,632,988	127,275,266	61,050,900	1,643,023	185,896,934	375,866,123	11.2%
VA	Fairfax City	270,933,655	27,093,366	10,243,545	0	0	11,588,350	21,831,895	8.1%
VA	Fairfax County	14,291,434,926	1,429,143,493	548,457,453	30,301,849	358,047,993	804,224,148	1,741,031,444	12.2%
VA	Falls Church	132,628,167	13,262,817	5,014,448	1,087,384	318,306	5,420,507	11,840,645	8.9%
VA	Loudoun County	6,929,710,934	692,971,093	271,906,248	525,538	6,881,037	302,094,529	581,407,352	8.4%
VA	Manassas City	1,082,929,533	108,292,953	54,873,873	0	196,601	46,764,409	101,834,883	9.4%
VA	Manassas Park	75,551,044	7,555,104	3,828,299	0	0	3,403,816	7,232,116	9.6%
VA	Prince William County	4,751,619,272	475,161,927	215,265,193	0	32,673,225	230,983,637	478,922,055	10.1%
DC	Washington	9,798,540,646	979,854,065	2,172,826,388	1,813,715,250	74,122,422	410,696,146	4,471,360,205	45.6%
	<b>TOTAL</b>	<b>65,075,560,359</b>	<b>6,507,556,036</b>	<b>8,001,750,303</b>	<b>3,499,029,767</b>	<b>1,515,467,776</b>	<b>3,420,730,873</b>	<b>16,436,978,719</b>	<b>25.3%</b>
				12.3%	5.4%	2.3%	5.3%		

## Topics for Further Discussion

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- Utility Renewable Energy Supplied – How does this relate to MWCOG regional goals?
- Retirement of Distributed Generation RECs – potential for some double counting with Utility RE supply.
- Jurisdictional Targets – Need to capture all targets and summarize for final report.
- Feasible Market Scenarios for Report (information on system sizes and types)

## Next Steps

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- Confirm MWCOG Jurisdiction Goals by 4/27/16
- Review regional constraints and opportunities by 4/27/16
- Provide draft analysis to MWCOG staff for review 5/03/16
- Provide updated final draft for review 5/13/16
- CEEPC review of full report on findings planned (in person) 5/25/16
- Issue final report and supporting detail 6/03/16