

# Distributed Generation Facilities Certified in Maryland

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# Distributed Generation

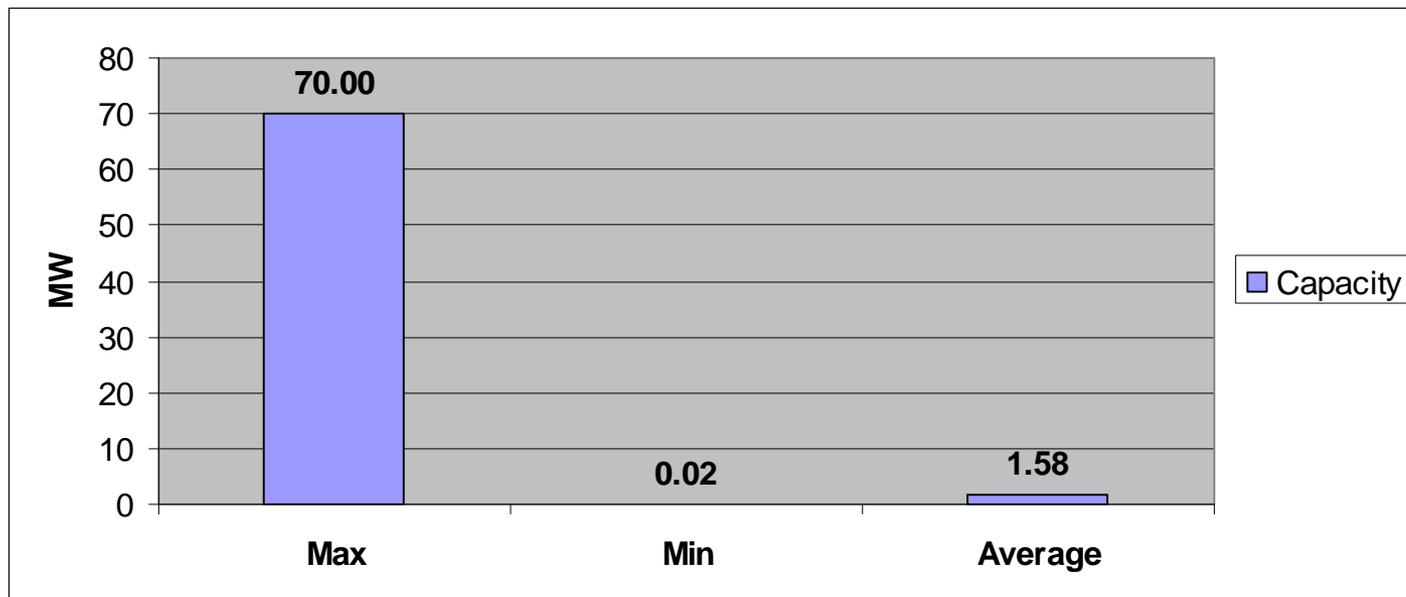
- **Distributed generation (DG)**
  - On-site generation
  - Small energy sources
- IRP has compiled a database of CPCN exemptions
  - PUC Article § 7-207.1 was initiated in 2001
  - IRP has recently completed an expansion of the content in this database

# What is Contained in the CPCN Exemption Database?

- The Commission collected information:
  - Generator type
  - Owner contact information
  - Fuel type and capacity
  - Local utility and installation year
  - Combined heat and power facility
  - Applicant's contact information

# General CPCN Exemption Information\*

- Total number of generators: 549
- Total capacity of generators: 867.4 MW



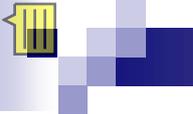
\*As of October 27, 2009

# Capacity Information

Capacity	< 373 kW	> 373 kW to 1 MW	> 1 MW to 2 MW	> 2 MW to 10 MW	> 10 MW
No. of Generators	44	265	180	53	7
Percentage	8.0%	48.3%	32.8%	9.7%	1.3%
Total capacity (MW)	10.1	185.7	299.1	149.9	222.7
Percentage	1.2%	21.4%	34.5%	17.3%	25.7%

# Generator Type

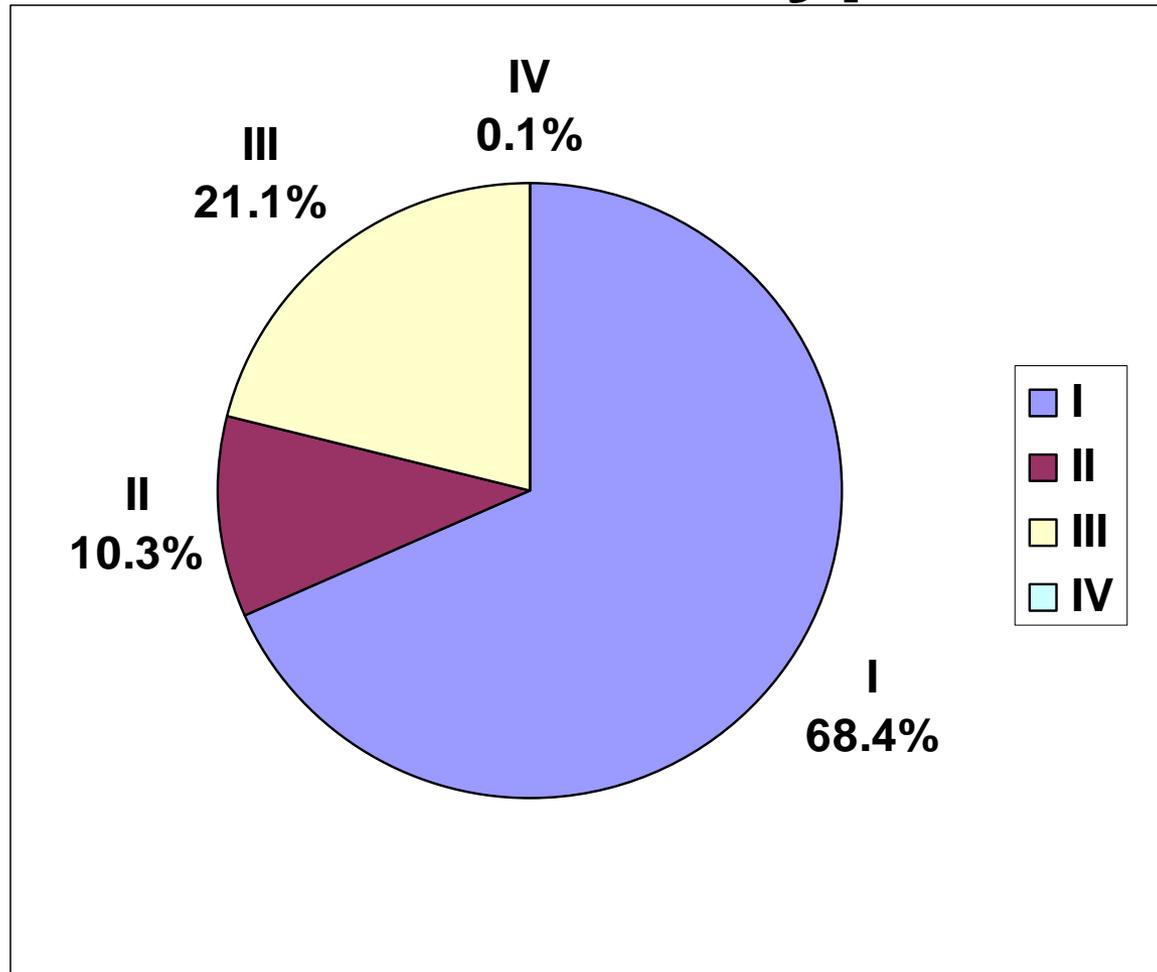
- Four generator types:
  - Type I: not synchronized with grid, not exporting power
  - Type II: synchronized with grid, not exporting power
  - Type III: synchronized with grid, exporting power
  - Type IV: synchronized with grid, includes “cease to energize” function (currently only includes solar)



# Total Capacity by Generator Type

Type	I	II	III	IV
Total Capacity (MWs)	593.5	89.7	183.4	0.9
No. of Generators (sites)	502	34	11	2
Maximum Capacity (MWs)	12.0	27.3	70.0	0.5
Minimum Capacity (MWs)	0.02	0.7	1.00	0.4
Average Capacity (MWs)	1.2	2.6	16.7	0.4

# Percentage Capacity by Generator Type

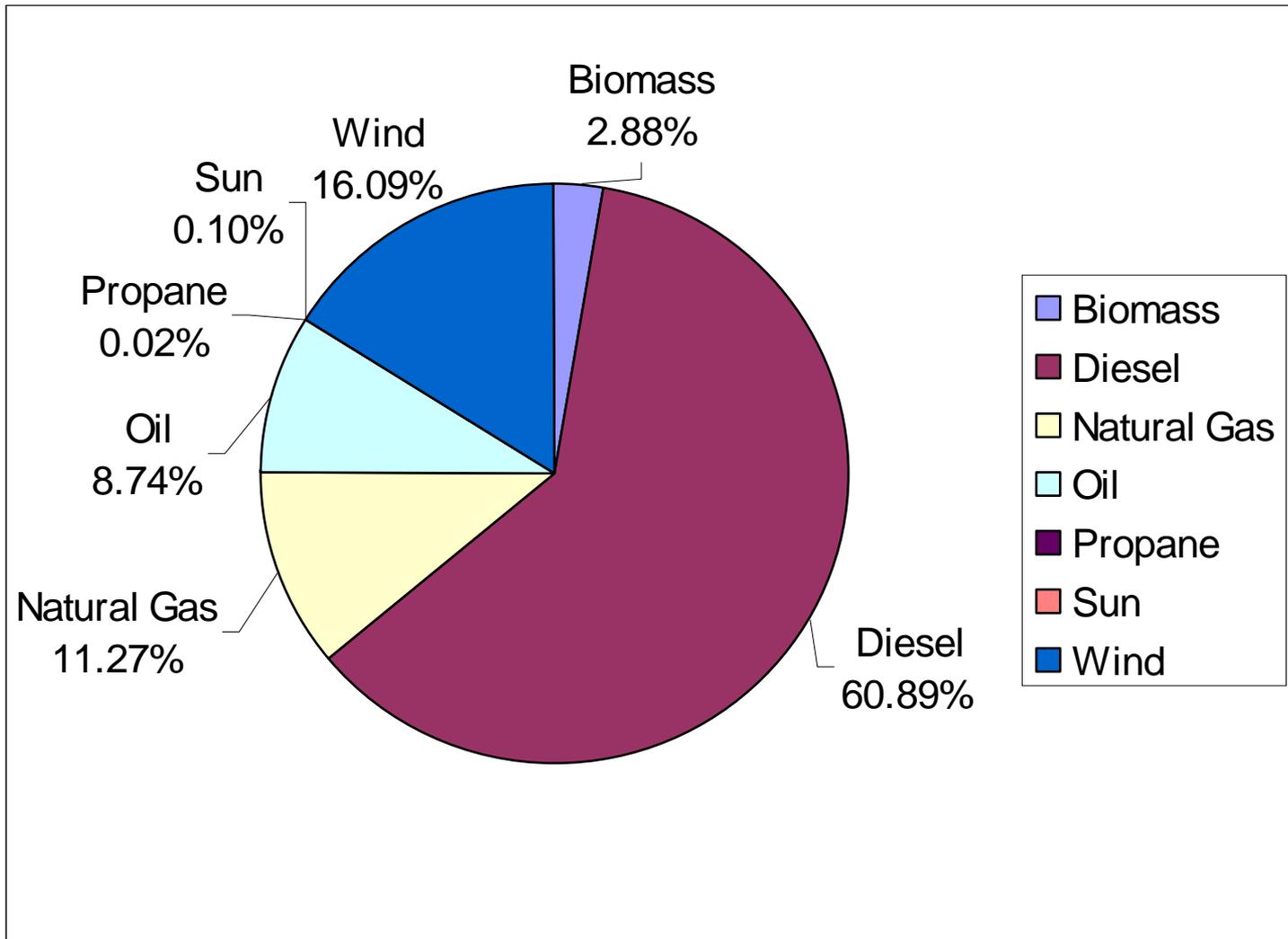


# Fuel Type

	Renewable	Non-Renewable
<b>No. of Generators</b>	<b>10</b>	<b>539</b>
<b>Capacity (MW)</b>	<b>165.4</b>	<b>702.0</b>
<b>Capacity Percentage</b>	<b>19.1%</b>	<b>80.9%</b>

- Fossil fuels: diesel, natural gas, oil and propane
- Renewable fuels: wind, biomass and sun

# Percentage Capacity by Fuel Type



# Total Capacity by Fuel and Type

Sum of Capacity (MWs)	Fuel Type							
	Type	Sun	Biomass	Diesel	Natural Gas	Oil	Propane	Wind
I			508.1	39.3	45.9	0.2		593.5
II		3.2	20.1	40.4	26.0			89.7
III		21.8		18.0	4.0		139.6	183.4
IV	0.9							0.9
<b>Grand Total</b>	<b>0.9</b>	<b>25.0</b>	<b>528.2</b>	<b>97.8</b>	<b>75.9</b>	<b>0.2</b>	<b>139.6</b>	<b>867.4</b>

# Combined Heat & Power (CHP) Units

- **Combined heat and power (CHP)**
  - Cogeneration (electricity and heat)
  - Energy recycling
- **CHP advantages**
  - Increase energy efficiency
  - Reduce carbon dioxide emissions
- **CHP in CPCN exemption**
  - Number of CHPs: 12
  - Capacity of CHPs: 80.95 MW  
(9.3% of total exemptions)

# Combined Heat & Power (CHP) Units (cont'd)

- Fuel type of CHP in CPCN exemption
- Fossil fuel
  - Natural gas: 7 sites, 52.0 MW  
53.18% of all natural gas CPCN exemptions
  - Diesel: 1 sites, 6.0 MW  
1.14% of all diesel CPCN exemptions
- Renewable fuel
  - Biomass: 4 sites, 22.95 MW  
91.98% all biomass CPCN exemption

# Participation in Demand Response Program

- Type I and Type II generators currently participate demand response programs
- Demand response participation\*
  - Total sites: 39
  - Total capacity: 51.9 MW  
(6.0% of total exemptions)

\*This is as of the time of the generators application for a CPCN exemption.

# Questions?



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