UPDATES TO THE 2014 DISCUSSION GUIDE & FINAL ACTION

AGENDA UPDATES

Updated 9/24/2014

GEW86: Both public comments have been withdrawn.

TENTATIVE HEARING ORDER FOR EACH INDIVIDUAL CONSIDERATION AGENDA

Note: Code changes to be heard out of numerical order or to be heard with a different code designation are indented. Be sure to review the cross index on page xxxvi for code change which affect codes other than those under their respective code change number prefix.

IgCC – General	<u>(See page 88)</u>	GG150-14	GG209-14
	GG102-14	GG140-14	GG210-14
<u>CHAPTER 1</u>	GG103-14	GG151-14	GG197-14
<u>(See page 1)</u>	GG104-14	GG152-14	GG194-14
GG6-14	GG105-14	GG153-14	GG202-14
GG27-14	GG106-14	GG154-14	GG212-14
GG9-14	GG107-14	GG155-14	GG192-14
GG10-14	GG108-14	GG79-14	GG211-14
GG72-14	GG109-14	GG156-14	GG214-14
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GG75-14	GG114-14	GG162-14	GG217-14
GG320-14	GG116-14	GG163-14	GG218-14
GG18-14	GG120-14	GG164-14	
GG19-14	GG121-14	GG77-14	IgCC –
GG26-14	GG122-14	GG166-14	Energy/Water
GG29-14	GG123-14	GG168-14	
GG31-14	GG126-14	GG169-14	CHAPTER 6
	GG129-14	GG170-14	<u>(See page 427)</u>
<u>CHAPTER 3</u>	GG131-14	GG68-14	GEW5-14
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GG85-14	GG133-14	CHAPTER 5	6676-14
GG86-14	GG134-14	(See page 216)	
GG87-14	GG58-14	GG184-14	GEW22-14
GG89-14	GG136-14	GG185-14	GEW23-14
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GG39-14	GG143-14	GG191-14	GFW28-14
GG88-14	GG145-14	GG200-14	GEW/29-14
GG95-14			
	GG 144-14 CC140-14		GEW31-14
	66149-14	GG200-14	GEW32-14

GEW33-14	GEW133-14	<u>(See page 280)</u>
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GEW40-14	GEW136-14	GG234-14
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GEW50-14	GEW137-14	GG249-14
GFW52-14	GFW139-14	GG251-14
GFW54-14	GFW145-14	GG254-14
GFW57-14	GFW147-14	GG256-14
GFW58-14	66327-14	GG258-14
GEW60-14	GG328-14	GG263-14
GEW62-14	GFW/1-1/	GG207-14
GEW62-14	GEW/2-14	CHAPTER 9
GEW65-14	GEW/2-14	(See page 332)
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GG78-14 GEW67 14	(See pages 621)	
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GEW04-14	GEW149-14	<u>(See page 344)</u>
GEW70-14	GEW150-14	GG281-14 GG283-14
GEW/1-14	GEW151-14	GG289-14
GEW68-14	GEW154-14	GG290-14
GEW /8-14	GEW156-14	GG297-14
GEW81-14	GEW159-14	GG299-14
GEW83-14	GFW160-14	GG302-14
GEW85-14	GEW161-14	GG308-14
GG51-14	GEW162-14	GG309-14
<mark>GEW86-14</mark>	GEW102-14 GEW172-14	GG314-14
GEW87-14	GEW173-14 GEW174-14	APPENDICES
GEW94-14	GEW174-14 GEW176-14	(See page 384)
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GEW119-14		
GEW132-14	CHAPTER 8	

GG17: Corrections made to the Public Comment in Section 304.1:

Public Comment:

Mike Collignon, representing Green Builder Coalition (mcollignon@greenbuildercoalition.org) requests Approve as Modified by this Public Comment.

Modify the proposal as follows:

101.3.2 Low-rise Residential Construction. Where selected as a jurisdictional requirement in accordance with Section 302.1, the following buildings, including the building sites and accessory structures, shall comply with ICC 700 or Section 304.

- 1. Detached one- and two-family dwellings and multiple single-family dwellings (townhouses) not more than three stories in height above grade plane with a separate means of egress.
- 2. Group R-3.
- 3. Group R-2 and R-4 residential buildings four stories or less in height above grade plane.

302.1 Requirements determined by the jurisdiction. The jurisdiction shall indicate the following information in Table 302.1 for inclusion in its code adopting ordinance:

- The jurisdiction shall indicate whether requirements for residential buildings, as indicated in Exception 1 to Section 101.3, are applicable by selecting "Yes" or "No" in Table 302.1. Where "Yes" is selected, the provisions of ICC 700-with a performance level of silver or above or Section 304 shall apply and the remainder of this code shall not apply.
- 2. Where the jurisdiction requires enhanced energy performance for buildings designed on a performance basis, the jurisdiction shall indicate a zEPI of 46 or less in Table 302.1 for each occupancy required to have enhanced energy performance.
- 3. Where "Yes" or "No" boxes are provided, the jurisdiction shall check the box to indicate "Yes" where that section is to be enforced as a mandatory requirement in the jurisdiction, or "No" where that section is not to be enforced as a mandatory requirement in the jurisdiction.

	Jurisdi	ctional	
Section	Require	ements	
	Detached one- and two-family dwellings and multiple single- family dwellings		
	(townhouses) not more than three stories in height above grade plane with a		
101.2	separate means of egress, their accessory structures, and the site or lot upon		
Exception 1.1	which these buildings are located, shall comply with ICC 700 with a	⊓Yes	⊓No
	performance level of Silver or above or Section 304.	2.00	2
	Group R-3 residential buildings, their accessory structures, and the site or lot		
101.3	upon which these buildings are located, shall comply with ICC 700 with a		
Exception 1.2	performance level of Silver or above or Section 304.	□Yes	□No
	Group R-2 and R-4 residential buildings four stories or less in height above		
	grade plane, their accessory structures, and the site or lot upon which these		
101.3	buildings are located, shall comply with ICC 700 with a performance level of		-No
Exception 1.3	Silver or above or Section 304.		

TABLE 302.1 REQUIREMENTS DETERMINED BY THE JURISDICTION

(Portions of table not shown remain unchanged)

304.1 Low Rise Residential Construction. Where projects that include residential buildings not more than 3.4 stories in height above grade plane are regulated by this section in accordance with Table 302.1, such projects shall comply with the following:

- 1. Not less than 30 percent of roof run-off shall be collected and diverted to landscape areas utilizing gutters, downspouts, scuppers, grading, swales, micro-basins or rainwater collection and storage system.
- Not less than 75 percent of existing on-site native plants shall be salvaged.
- 3-1. Improved landscaping shall be native or Xeriscape. Where new landscaping is installed as part of a site plan or within the building site, native plants shall be installed in accordance with Section 405.3
- 4 <u>2</u>. Automatic irrigation system controllers shall include weather- or soil moisture-based controllers that automatically adjust irrigation rates in response to changes in weather conditions. Where a new landscape irrigation system is installed, the irrigation system shall comply with Section 404.
- 5 3. Termite control consisting of non-toxic materials such as <u>baiting systems</u> borate treatment, physical barriers and <u>or</u> pestresistant building materials shall be provided.
- 6 4. A construction waste management plan in accordance with Section 503.1 shall be provided.
- 7 5. Wood used to construct the building or other elements on the building site shall not be tropical wood.
- 8 6. Dwellings and dwelling units shall comply with the International Energy Conservation Code.

9. Exterior lighting shall be provided with daylight sensors with a manual override switch to turn the exterior lighting off.

- 10 7. Building service water heater heating systems shall comply with Sections 607 and 702.8.
- 11. Hot water lines, such as, but not limited to, trunk lines, branch lines, joints, elbows, and lines installed under floor slabs and within conditioned spaces, throughout the building shall have an insulation value of not less than R-3

Exception: Branch lines of a central manifold or parallel-connected distribution system are not required to be insulated.

- <u>42</u> 8. <u>Tank type</u> toilets <u>and water closets</u> shall <u>be certified and listed as compliant with the U.S. EPA WaterSense tank-type</u> toilet specification. have a flush rate of not more than 1.28 gallons.
- 13 9. Lavatory faucets shall be certified and listed as compliant with the U.S. EPA WaterSense specification have a flow rate of not more than 1.5 gpm.
- 14 10. Shower heads shall have a flow rate of not more than 2.0 gpm. <u>Wall-mounted showerheads shall be certified and listed as compliant with the U.S. EPA WaterSense specification.</u>
- 11. Kitchen faucets shall have a flow rate of not more than 1.8 gpm. Kitchen faucets are permitted to temporarily increase the flow above the maximum rate, but not to exceed 2.2 gpm and shall automatically revert to the maximum flow rate of 1.8 gpm upon release of the operating handle or lever.
- 12. Residential flushing urinals shall be certified and listed as compliant with the U.S. EPA WaterSense flushing urinal specification.
- 45 13. Air handling equipment or ductwork shall not be located inside a garage unless it is located in an isolated or air sealed mechanical room or space.
- 16 14. Duct openings shall be protected during construction in accordance with Section 803.1.1 or the ducts, coils and blower fan shall be cleaned before occupancy.
- 47 <u>15</u>. Emissions from composite wood products, adhesives and sealants, architectural paints and coatings, flooring and insulation shall be limited in accordance with Section 806.
- 18 16. Where installed, central vacuum systems shall be provided with outside exhaust.
- 19. Mechanical kitchen and bathroom exhaust fans shall vent to the outdoors and be installed in accordance with ASHRAE 62.2.
- 20. Combustion appliances shall be vented.
- <u>24 17.</u> Space and water heating equipment shall be closed sealed combustion or power and direct-vented or located in a space atmospherically isolated from the conditioned area detached building or open-air facility.
- 22. The use of HCFC-free foam insulation shall not be prohibited.23. Buildings in radon zone 1 shall comply with the radonresistant construction requirements of Appendix F of the International Residential Code.
- 23 18. Buildings in radon zone 1 shall comply with the radon-resistant construction requirements of Appendix F of the International Residential Code.
- 24 19. Buildings in radon zone 2 shall be tested and where results are determined to exceed safe radon limits, the building shall comply with the radon-resistant construction requirements of Appendix F of the International Residential Code.

Commenter's Reason: As of July 2014, the IgCC has been adopted in 11 jurisdictions and 2 states, while the ICC-700 standard has only been adopted in 3 jurisdictions. Adding this set of provisions as a jurisdictional option will help ensure more communities can easily incorporate a residential component of the IgCC.

It is important to note this proposal does not eliminate the ICC-700 standard as a compliance path for low-rise residential in the IgCC. But code officials should have a non-points based, non-partisan set of minimum requirements as a compliance option for sustainable low-rise residential construction within the IgCC.

GG17-14

Updated 9/25/2014

GG194-14: Add Public Comment 7:

Public Comment 7:

Matt Dobson requests Approve as Modified by this Public Comment.

Modify as Follows:

505.2 Material selection. Not less than 75 percent of the total building materials used in the project, based on mass, volume or cost, shall comply with <u>a combination of one or more of the following</u> Sections 505.2.1, 505.2.2, 505.2.3, 505.2.4, or 505.2.5 or 505.2.6. Where a material complies with more than one section, the material value shall be multiplied by the number of sections that it complies with. The percentage shall be further adjusted in accordance with Section 505.2.6. The value of total building material mass, volume or cost shall remain constant regardless of whether materials are tabulated in more than one section.

505.2.1 Used materials and components. Used materials and components shall comply with the provisions for such materials in accordance with the applicable code reference in Section 102.4 and the applicable requirements of this code.

505.2.6.1 505.2.1 Environmental Product Declarations Compliance. Environmental product declarations shall comply with ISO 21930 and ISO 14025, and shall include at least the production stage of the life cycle for the building products or cradle-to-gate. Life cycle assessment data used for environmental product declarations shall be in accordance with the principles of ISO 14040 and ISO 14044. Environmental product declarations shall be either brand-specific or industry-wide generated.

505.2.6 Environmental Product Declarations. <u>Used materials and components.</u> For the purposes of Section 505.2, the percentages of building materials with environmental product declarations in accordance with Section 505.2.6.1 shall be multiplied by 1.5. Used materials and components shall comply with the provisions for such materials in accordance with the applicable code reference in Section 102.4 and the applicable requirements of this code.

Commenter's Reason: As currently accepted only certain attributes are measured and then environmental product declarations (EPDs) are given "extra credit". This is backwards, what we need to do is drive the science and comprehensive evaluation of environmental impact.

By making this change we can set the foundation for the use of EPDs and Life Cycle Assessment. EPDs have quickly become the true way to look at materials and determine not only how they currently impact the environment but also ways that they can be changed to improve their impact on the environment.

Instead we are currently relying on measures that may or not make a difference on improving the environment. This change also includes a renumbering of the section, putting EPDs at the top and moving used materials to the end. The numbering change is reflected as well.

This change also takes out the role of double dipping and multipliers, which have been unsubstantiated and arbitrary.

Note neither definition nor referenced standards are impacted by this modification.

GG194-14

Updated 9/26/2014

GG217-14: Correction made to the Public Hearing Results:

Public Hearing Results

Committee Action:

Committee Reason: The Committee agreed with the proponent's published reason statement. Timing is important for the permitting process as if the jurisdiction doesn't hold to specific timelines, there could be legal implications.

Assembly Action:

None

Approved as Submitted

GEW14-14: Charts added to Reason statement on Public Comment 2:

Public Comment 2:

Name: Jay Crandell, Applied Building Technology Group LLC, representing Foam Sheathing Committee of the American Chemistry Council (jcrandell@aresconsulting.biz) requests Approve as Modified by this Public Comment.

Modify the proposal as follows:

601.6 Building thermal envelope trade-off allowance. Where compliance with this code permits use of U-factors, C-factors, Ffactors, or SHGC values greater than those required by Section 605.1.1, the values permitted shall not exceed by more than 10 percent those required in Tables C402.1.4 and C402.4 of the *International Energy Conservation Code*.

605.1.1 Insulation and fenestration criteria. The building thermal envelope shall exceed the requirements of Tables C402.1.2 and C402.3 of the International Energy Conservation Code by not less than 10 percent. Specifically, for For purposes of compliance with this code, each U-factor, C-factor, F-factor and SHGC value in Tables C402.1.4 and C402.4 of the

specified tables International Energy Conservation Code shall be reduced by 10 percent to determine the prescriptive criteria for this code. In Sky Type "C" locations specified in Section 808.4, the skylights shall not exceed 5 percent of the building roof area.

Exception: Increased U-factor, C-factor, F-factor, and SHGC values shall be permitted in accordance with Section 601.6.

Commenter's Reason: FSC supports the originally submitted GEW14 proposal and also offers this public comment as an alternative to achieve similar purpose. This public comment is coordinated with Section 605.1.1 by adding an exception to make it clear that trade-offs are available as an option to allow relaxation of the prescriptive envelope requirements in the IgCC. It also simplifies and clarifies the prescriptive insulation and fenestration language in Section 605.1.1. In addition, it addresses the committee's confusion with regard to area averaging as referenced in the original proposal. Finally, it makes corrections to coordinate with new table numbers in the 2015 IECC.

The original GEW-14 proposal and this public comment provide the flexibility of a trade-off allowance to reduce envelope requirements by as much as 20% below the IgCC requirements in Section 605.1.1. Thus, envelope requirements in the IgCC can be reduced to a level that is 10% less stringent than the IECC. This "overlay" approach uses the IECC provisions as a foundation for requirements in the IgCC and allows trade-offs to be used such that the familiar prescriptive insulation and fenestration requirements in the IECC can be used (or even further reduced). Consequently, this approach preserves flexibility while also ensuring long-lasting energy efficiency for buildings in a way that aligns with the sustainability intent of the IgCC.

The ICC membership is encouraged to carefully consider the following reasons for voting in support of GEW-14 as submitted or as modified by this public comment:

- The building envelope performs 24-7-365 for the entire life of the building and is the most durable and reliable aspect of energy conservation. NAHB's report, "Study of Life Expectancy of Home Components", life-cycle of building materials survey indicates that the life-expectancy of insulation is for "lifetime" of the building which is potentially more than 100 years. Other reports by DOE and NIBS confirm this "lifetime" estimate.
- 2. It is costly to later improve the insulation components concealed with the building structure; therefore, the best time to provide cost-effective envelope performance is when the building is being originally constructed. The best time is now, not tomorrow ...or 20 years from now. There is no shortage of materials and methods to provide competitive, safe, durable, and cost-effective solutions for building envelopes; thus, there is no practical need to continue to allow an unlimited trade-off of durable building envelope performance.
- 3. As IgCC is a "green code", durability and energy efficiency are key aspects of sustainability and the intent of the IgCC. Allowing the most durable aspects of building energy conservation to potentially be traded off by unlimited and potentially significant amounts should be avoided or at least moderated. This proposal provides a reasonable and moderate allowance.
- 4. The trade-off allowance concept is not new and it has been included in other codes and standards, such as ASHRAE 189.1 Appendix D (Section D1.3), IECC Section R402.5 (limits on fenestration U-factor and SHGC), California Title 24, Subchapter 7 (limits on maximum U-factor for roofs and walls), and, more recently, Georgia amendments to 2009 IECC (minimum R-values and U-factors for use with trade-offs), and Section R406.2 of the IECC (thermal envelop not less than the 2009 IECC in use of the ERI compliance alternative). Thus, a trade-off limit has been shown to be workable and, for sustainable construction, ensures that the most durable aspect of energy efficiency is not too deeply traded away.
- 5. Allowing trade-offs at a sensible level is also a principle closely associated with integrated design of overall building systems. Integrated design considers not only the interactions and interdependencies between building systems, but it also considers the vulnerability of over- or under-emphasizing the importance of various parts or sub-systems of the overall building. This proposal provides a back-stop against under-emphasizing the building envelope while still allowing significant flexibility to trade it off for more emphasis of other systems in achieving cost-effective code compliance.
- 6. Meaningful resiliency of buildings in the face of disaster, power-outages, and extreme winter or summer conditions is also a key component of sustainable construction when approached effectively in a practical and cost-effective way. When a power outage occurs, only the building envelope remains functional in controlling the building indoor environment. Thus, it

is important to a resilient response to power outages that may occur at any time and often at very inconvenient times, e.g., winter ice storms, summer thunderstorms and hurricanes, etc. When extreme winters or summers occur (such as the winter of 2013-2014), energy demand peaks, supplies are depleted, and energy prices rise (see charts below). The energy code provisions are based on "average" or "typical" years not extremes that might occur every 5, 10, or more years. With building envelope thermal performance traded-off to unlimited extents currently permitted in the code, the resiliency aspect of sustainability is harmed. The IgCC can help remedy this concern with the approval and inclusion of GEW-14 as submitted or as modified by this public comment.



Chart 1: Depletion of Natural Gas Reserves (Winter 2013-2014)



Updated 9/16/2014

GEW33-14: eGrid added to Reason statement on Public Comment 2:

Public Comment 2:

Steven Rosenstock, representing Edison Electric Institute (srosenstock@eei.org) requests Approve as Modified by this Public Comment.

Modify the proposal as follows:

602.1.2.1 Modifications to Appendix G of ASHRAE 90.1. The performance rating in Section G1.2 of ASHRAE 90.1 shall be based on energy use converted to consistent units in accordance with Sections 602.1.2.2 and 602.1.2.3, instead of energy cost.

ELECTRICITY GENERATION ENERGY CONVERSION FACTORS BY EPA eGRID SUB-REGION*									
eGRID 2007 <u>2010</u> SUB-REGION ACRONYM	eGRID 2007 2010 SUB-REGION NAME	ENERGY CONVERSION FACTOR							
AKGD	ASCC Alaska Grid	3.27-<u>2.95</u>							
AKMS	ASCC Miscellaneous	1.93 <u>0.90</u>							
ERCT	ERCOT AII	3.11 <u>2.28</u>							
FRCC	FRCC All	3.17 <u>2.43</u>							

TABLE 602.1.2.1

eGRID 2007 <u>2010</u> SUB-REGION ACRONYM	eGRID 2007 2010 SUB-REGION NAME	ENERGY CONVERSION FACTOR
HIMS	HICC Miscellaneous	3.78
HIOA	HICC Oahu	3.29 <u>2.98</u>
MROE	MRO East	3.28 <u>2.50</u>
MROW	MRO West	3.49
NYLI	NPCC Long Island	3.41 <u>3.23</u>
NEWE	NPCC New England	2.94 <u>1.58</u>
NYCW	NPCC NYC/Westchester	3.09 <u>1.71</u>
NYUP	NPCC Upstate NY	2.55 <u>1.08</u>
RFCE	RFC East	3.23 <u>1.75</u>
RFCM	RFC Michigan	3.29 <u>2.62</u>
RFCW	RFC West	3.27 <u>2.31</u>
SRMW	SERC Midwest	3.33 <u>2.73</u>
SRMV	SERC Mississippi Valley	3.13
SRSO	SERC South	3.06
SRTV	SERC Tennessee Valley	3.10
SRVC	SERC Virginia/Carolina	3.23 <u>1.80</u>
SPNO	SPP North	3.58 <u>2.80</u>
SPSO	SPP South	3.22 <u>2.84</u>
CAMX	WECC California	2.93 <u>1.52</u>
NWPP	WECC Northwest	2.36 <u>1.44</u>
RMPA	WECC Rockies	3.48 <u>3.05</u>
AZNM	WECC Southwest	3.18 <u>2.14</u>

602.2.1 Onsite electricity. Emissions associated with use of electric power shall be based on electric power excluding any renewable or recovered waste energy covered under Section 602.2.1. Emissions shall be calculated by converting the electric power used by the building at the electric utility meter or measured point of delivery, to MWHs, and multiplying by the CO2e conversion factor in Table 602.2.1 based on the EPA eGRID Sub-region in which the building is located.

eGRID SUB-REGION ACRONYM	eGRID SUB-REGION NAME	<u>2010</u> CO₂e RATE (lbs/MWh)
AKGD	ASCC Alaska Grid	1577 - <u>1260</u>
AKMS	ASCC Miscellaneous	639
ERCT	ERCOT AII	1445 <u>1223</u>
FRCC	FRCC All	1322 <u>1202</u>

TABLE 602.2.1 ELECTRICITY EMISSION RATE BY EPA eGRID SUB-REGION*

eGRID SUB-REGION ACRONYM	eGRID SUB-REGION NAME	<u>2010</u> CO₂e RATE (lbs/MWh)		
HIMS	HICC Miscellaneous	1566 <u>1336</u>		
HIOA	HICC Oahu	1873 <u>1631</u>		
MORE MROE	MRO East	1813 <u>1620</u>		
MROW	MRO West	1851 <u>1545</u>		
NYLI	NPCC Long Island	1447 <u>1341</u>		
NEWE	NPCC New England	813 <u>728</u>		
NYCW	NPCC NYC/Westchester	768 <u>624</u>		
NYUP	NPCC Upstate NY	590 <u>548</u>		
RFCE	RFC East	1065 <u>1007</u>		
RFCM	RFC Michigan	187 4 <u>1638</u>		
RFCW	RFC West	1711 <u>1512</u>		
SRMW	SERC Midwest	1976 <u>1820</u>		
SRMV	SERC Mississippi Valley	1221 <u>1034</u>		
SRSO	SERC South	1519 <u>1361</u>		
SRTV	SERC Tennessee Valley	1538 <u>1397</u>		
SRVC	SERC Virginia/Carolina	1180 <u>1080</u>		
SPNO	SPP North	2062 <u>1809</u>		
SPSO	SPP South	1860 <u>1588</u>		
CAMX	WECC California	835 <u>613</u>		
NWPP	WECC Northwest	959 <u>847</u>		
RMPA	WECC Rockies	2131 <u>1906</u>		
AZNM	WECC Southwest	1428 <u>1183</u>		

Commenter's Reason: If upstream estimates are to be used, then the estimates should be as up to date as possible. The revisions for Table 602.1.2.1 are based on the values found in the eGRID spreadsheets, which can be found at the following web site:http://www.epa.gov/cleanenergy/energy-resources/egrid/index.html file name eGRID_9th_edition_V1-0_year_2010_Data.xls The calculations used can be found on the attached spreadsheet

For Table 602.1.2.2, the values are from the Summary Tables, page 1, entitled "Year 2010 eGRID Subregion Emissions - Greenhouse Gases" which can be found at the following web

site:http://www.epa.gov/cleanenergy/documents/egridzips/cGRID_9th_edition_V1-0_year_2010_Summary_Tables.pdf Buildings use energy and save energy at all times of the day, not just "at the margin". If these estimated values are to be part of the standard, then the estimated values derived on an annualized basis should be used.

eGRID 9th edition Version 1.0 Subregion File (Year 2010 Data)

This eGRID subregion file has 26 records and 113 data elements.

eGRID 9th edition year 2010 file eGRID subregion sequence number	eGRID subregion acronym	eGRID subregion name	NERC region acronym associated with the eGRID subregion acronym	eGRID subregion nameplate capacity (MW)	eGRID subregion annual heat input (MMBtu)	eGRID subregion ozone season heat input (MMBtu)	eGRID subregion annual net generation (MWh)	Calculated Net Generation in MMBtu	"Source" ratio of upstream heat input to net generation	eGRID 2010 Grid Gross Loss Factor	Overall "source" ratio of upstream heat input to end use
SEQSRL10	SUBRGN	SRNAME	NERC	NAMEPCAP	SRHTIAN	SRHTIOZ	SRNGENAN				
	1 AKGD	ASCC Alaska Grid	ASCC	1,522.2	50,181,197.8	19,039,058.6	5,332,020.2	18,198,185.0	2.76	1.0689	2.95
	2 AKMS	ASCC Miscellaneous	ASCC	713.2	4,083,735.4	1,276,711.8	1,415,158.2	4,829,934.8	0.85	1.0689	0.90
	3 ERCT	ERCOT All	TRE	100,595.3	2,508,071,653.6	1,253,076,706.2	345,382,525.6	1,178,790,560.0	2.13	1.0712	2.28
	4 FRCC	FRCC All	FRCC	64,862.9	1,707,668,214.0	827,883,068.5	217,890,866.6	743,661,527.8	2.30	1.0582	2.43
	5 HIMS	HICC Miscellaneous	HICC	895.3	24,643,730.8	10,509,405.5	2,952,481.9	10,076,820.8	2.45	1.0738	2.63
	6 HIOA	HICC Oahu	HICC	1,925.6	74,745,525.9	31,783,410.6	7,883,554.0	26,906,569.9	2.78	1.0738	2.98
	7 MROE	MRO East	MRO	8,897.0	260,823,371.0	120,196,272.5	32,293,505.5	110,217,734.4	2.37	1.0582	2.50
	8 MROW	MRO West	MRO	55,325.0	1,533,793,009.8	661,226,510.4	203,656,312.3	695,078,993.8	2.21	1.0684	2.36
	9 NYLI	NPCC Long Island	NPCC	6,000.4	126,585,793.8	68,406,080.8	12,148,487.3	41,462,787.3	3.05	1.0582	3.23
	10 NYCW	NPCC NYC/Westchester	NPCC	13,906.9	208,269,062.9	110,794,825.3	40,916,871.9	139,649,283.7	1.49	1.0582	1.58
	11 NEWE	NPCC New England	NPCC	36,485.3	716,857,906.4	344,378,586.2	129,920,243.4	443,417,790.8	1.62	1.0582	1.71
	12 NYUP	NPCC Upstate NY	NPCC	25,067.6	309,310,480.8	149,252,849.4	88,551,618.2	302,226,673.0	1.02	1.0582	1.08
	13 RFCE	RFC East	RFC	74,350.1	1,549,031,745.1	740,033,986.0	274,646,405.8	937,368,182.9	1.65	1.0582	1.75
	14 RFCM	RFC Michigan	RFC	29,590.2	774,852,656.9	359,639,509.1	91,571,321.5	312,532,920.2	2.48	1.0582	2.62
	15 RFCW	RFC West	RFC	147,391.4	4,456,982,038.6	1,973,261,041.3	598,607,320.8	2,043,046,786.0	2.18	1.0582	2.31
	16 SRMW	SERC Midwest	SERC	33,454.6	1,195,093,881.9	525,111,001.8	135,896,937.1	463,816,246.4	2.58	1.0582	2.73
	17 SRMV	SERC Mississippi Valley	SERC	50,942.3	1,212,579,369.1	598,571,676.9	176,667,075.4	602,964,728.4	2.01	1.0582	2.13
	18 SRSO	SERC South	SERC	71,782.9	2,040,038,434.5	989,969,279.5	270,641,138.1	923,698,204.5	2.21	1.0582	2.34
	19 SRTV	SERC Tennessee Valley	SERC	62,065.4	1,684,941,522.3	756,173,222.6	236,050,232.4	805,639,443.3	2.09	1.0582	2.21
	20 SRVC	SERC Virginia/Carolina	SERC	80,849.7	1,812,690,334.6	864,053,423.6	311,931,345.0	1,064,621,680.6	1.70	1.0582	1.80
	21 SPNO	SPP North	SPP	21,261.8	620,271,977.4	281,127,253.0	69,418,232.2	236,924,426.6	2.62	1.0684	2.80
	22 SPSO	SPP South	SPP	44,883.8	1,348,604,011.3	662,712,273.4	148,456,365.7	506,681,576.0	2.66	1.0684	2.84
	23 CAMX	WECC California	WECC	75,066.4	1,032,210,203.1	416,618,518.7	212,172,138.5	724,143,508.9	1.43	1.0684	1.52
	24 NWPP	WECC Northwest	WECC	69,721.0	1,232,327,404.5	490,929,493.2	267,967,318.0	914,572,456.4	1.35	1.0684	1.44
	25 RMPA	WECC Rockies	WECC	18,178.1	634,652,867.1	272,549,492.0	65,206,132.2	222,548,529.2	2.85	1.0684	3.05
	26 AZNM	WECC Southwest	WECC	49,321.6	1,220,995,266.4	582,085,052.6	178,271,415.3	608,440,340.4	2.01	1.0684	2.14
		US			28,340,305,394.9			14,081,515,891.2	2.01	1.0618	2.14

GEW33-14

GEW54-14: The word "exhaust" should show as struck-out in Item #5 of Public Comment 2:

Public Comment 2:

Jonathan Siu, City of Seattle, Dept of Planning & Development, representing Washington Association of Building Officials Technical Code Development Committee (jon.siu@seattle.gov) requests Approve as Modified by this Public Comment.

Modify the proposal as follows:

604.1 Establishing an open and interoperable automated demand-response (Auto-DR) infrastructure. Where this section is indicated to be applicable in Table 302.1, buildings that contain heating, ventilating, air-conditioning (HVAC) or lighting systems shall comply be provided with Auto-DR infrastructure in accordance with Sections 604.1 through 604.4.

Exception: Auto-DR infrastructure is not required for the following; buildings and systems:

- 1. Buildings located where the electric utility or regional independent system operator (ISO) or regional transmission operator (RTO) does not offer a demand response program to buildings regulated by this code.
- 2. Buildings with onsite renewable energy systems that have a minimum rated capacity no less than 20 percent of the building's peak energy demand.
- 3. Hospitals and critical emergency response facilities.
- 4. Spaces used for hazardous materials storage.
- 5. Building smoke exhaust removal and smoke control systems.
- 6. Means of egress illumination required by Chapter 10 of the International Building Code.
- 67. Manufacturing process systems
- 78. Buildings with passive or active features that show peak electric energy use reduction of 15 percent or more during demand response periods identified by the code official. Modeled peak energy use shall be determined in accordance with Section 602 and shall demonstrate that the building reduces modeled peak daily electric energy use by not less than 15 percent from the baseline building for the demand response period identified by the code official.
- 89. Systems serving process loads where constant temperatures are necessary to prevent degradation of plants, animals, or other temperature-sensitive materials.

Commenter's Reason: The first change to the main paragraph is an editorial fix to clean up the charging language.

The changes to the exception are intended to exempt emergency systems required by the building code from Auto-DR requirements. Critical systems to deal with smoke include smoke removal (IBC Section 403.4.7) and smoke control (IBC Section 909), not just smoke exhaust systems. Similarly, egress lighting should not be overridden by Auto-DR control systems, since they may need to operate at any time.

Updated 9/24/2014

GEW86-14: Public Comment 1 and 2 have been withdrawn

Updated 9/16/2014

GEW137-14: Tables added to the reason statement for Public Comment 4:

Public Comment 4:

Charles Foster, representing Edison Electric Institute (cfoster20187@yahoo.com) requests Disapprove.

Commenter's Reason: The proponent's intentions were good in this proposal but, as written, it is problematic.

REC's are a creation of state statutes. There are no federal REC's. This means that what qualifies for a REC in one state may or may not qualify in another. For instance, electricity from incinerated waste is a REC in Maryland but not in New Jersey, Washington, DC or Delaware.

As another example, Pennsylvania defines coal mine methane as renewable. No other states do. Maryland allows poultry litter incineration as a REC but not other states.

Each state has its own rules for the definition of renewable energy credits and this proposal would pit the IGCC against the states.

The IGCC's definition of REC's should defer to the definition of REC's in the state where a building is sited. Please disapprove this proposal.

See attachment.



	NJ	MD	DC	PA	DE
Regulation or	N.J.A.C 14:4-8 - NJ Renewable	HB 1308 / SB 869 (2004)	Bill 15-747 (4/12/2005)	SB 1030/Act 213 (2004)	SB 74 (2005)
Legislation	Portfolio Standards Rules	HB 375 (2008), SB 277	Bill 17-0492 (10/6/2008)	HB 1203/Act 35 (2007)	SB 19 (2007), SB 328 (2008)
2228	A.B. 3520 (7/1/2010)	(5/2010), SB791 (5/2012),	Bill 19-0384 (8/1/2011)	HB 2200/Act 129 (2008)	SB 119 (7/2010),
	SB 1925 (7/23/2012)	HB226 (4/2013)	Bill 19-10 (8/9/2011)		SB 124 (7/2011)
Geographic	Energy shall be generated within	Source must be (1) located in	Source must be located within	Sources located inside the	"Eligible Energy Resources"
Eligibility	or delivered into the PJM region.	the PJM Region or (2) in a	the PJM Interconnection region	geographical boundaries of this	include energy resources
	If the latter, the Energy must	control area that is adjacent to	or within a state that is adjacent	Commonwealth or within the	located within or imported into
	have been generated at a facility	the PJM Region, if the	to the PJM Interconnection	service territory of any regional	the PJM region.
	that commenced construction on	electricity is delivered into the	region.	transmission organization that	Customer-sited resources must
	or after January 1, 2003.	PJM Region. Resources in	Solar systems approved after	manages the transmission	be located in DE.
	Solar resources must be	states adjacent to PJM are	2/1/2011 must be connected to	system in any part of this	
	connected with distribution grid	accepted until 12/31/10.	the DC distribution grid.	Commonwealth.	
	serving NJ.	After 12/31/11 solar resources			
	80004	must be connected with			
		distribution grid serving MD.			
Reporting	June 1st to May 31 st .	January 1 st to December 31 st .	January 1 st to December 31 st .	June 1 st to May 31 st .	June 1st to May 31 st .
Period	Compliance reports due 10/1.	Compliance reports due 4/1.	Compliance reports due 5/1.	Compliance reports due 9/1.	Compliance reports due 10/1.
Banking	Class I RECs and SRECs can be	A Renewable Energy Credit	A Renewable Energy Credit	Alternative Energy credits can	An unused renewable energy
	banked for compliance in either	shall exist for 3 years from the	shall exist for 3 years from the	be banked for compliance in	credit shall exist for 3 years
	of the following two energy	date created.	date created.	either or both of the two	from the date created.
	years (per A.B. 3520). S.B.			subsequent reporting years (as	
	1925 extended the lifetime for			of the effective date of this	
	SRECs an additional two years.			Act)	
	Class II RECs cannot be banked.				
Credit Multipliers	No	No (they expired)	No (they expired)	No	a) 300% credit for (1) in-state solar dectric or (2) renewable held cells installed on or before 12/31/2014. b) 150% credit for wind energy installations sited in Delaware on or before 12/31/2012. c) 350% credit for DPL wind energy installations sited off the DE coast on or before 5/31/2017. d) 110% credit for solar or wind installations sited in Delaware for which at least 50% of the equipment or components are manufactured in Delaware or installed with a minimum 75% state workforce.
Technology -	Solar	Solar PV, and Solar water heat	Solar, including solar thermal	Solar	Solar
Specific	Offshore wind	commissioned after 6/1/11			Qualified fuel cells can count
Requirements		Offshore wind - up to 2.5%			for up to 30% of the SREC
(set asides)		beginning in 2017			requirement

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	NJ	MD	DC	PA	DE
Class I or Tier	Class I renewable sources:	Tier 1 Renewable sources:	Tier 1 Renewable sources:	Tier I alternative Energy	Electricity derived from:
I Renewable	 solar technologies 	(1) solar and solar water heat;	(1) solar (including solar	sources:	a. solar;
Energy	 photovoltaic technologies 	(2) wind;	thermal);	(1) Solar photovoltaic and solar	b. wind;
Sources	 wind Energy 	(3) qualifying biomass;	(2) wind;	thermal energy.	c. ocean;
	 fuel cells powered by 	(4) methane from a landfill or	(3) qualifying biomass;	(2) Wind power.	d. geothermal;
	renewable fuels	wastewater treatment plant;	(4) methane from a landfill or	(3) Low-impact hydropower.	e. fuel cell capable of being
	 geothermal technologies 	(5) geothermal;	wastewater treatment plant;	(4) Geothermal Energy.	powered by Renewable Fuels;
	 wave or tidal action 	(6) ocean;	(5) geothermal;	(5) Biologically derived	f. combustion of gas from the
	 methane gas from landfills 	(7) a fuel cell powered by	(6) ocean, including Energy	methane gas.	anaerobic digestion of organic
	or a biomass facility,	methane or biomass;	from waves, tides, currents,	(6) Fuel cells.	material;
	provided that the biomass is	(8) a small hydroelectric plant	and thermal differences; and	(7) Biomass Energy.	g. small hydroelectric facility
	cultivated and harvested in a	(less than 30 M W);	(/) a fuel cell that produces	(8) Coal mine methane.	(30 megawatts or less);
	sustainable manner.	(9) poultry litter incineration	electricity from a tier 1		n. sustainable biomass,
	 In-state hydroelectric 	(10) ments to Engineer for ilities	(2) an (4) a fethic and a set in		excluding waste to energy;
	facilities <3 MW placed in	(10) waste-to-Energy facilities	(3) of (4) of this subsection.		1. Tanunni meutane gas,
	service after 7/23/2012	(11) certain seathermal heating			
		and acoling systems and			
		hiomass systems that generate			
		thermal energy			
Class II or	Class II renewable sources:	Tier 2 Renewable sources:	Tier 2 Renewable sources:	Tier II alternative Energy	"New Renewable Generation
Tier II	 resource recovery facility 	(1) hydroelectric power other	(1) hydroelectric power other	sources:	Resources" are those in
Sources	(subject to qualifications)	than pump storage generation	than pump storage generation	(1) Waste coal.	commercial operation after
9994 (AMC 1997)	small hydro power facility		(2) waste-to-Energy	(2) Distributed generation	12/31/1997. No more than 1%
	(less than 30 MW)			systems.	of each year's sales may come
	N 5		For Tier 2 sources, the facility	(3) Demand-side management.	from resources that aren't New.
			must have existed and been	(4) Large-scale hydropower	
			operational as of January 1,	(including pumped storage).	
			2004.	(5) Municipal solid waste.	
			27427 A A	(6) Generation of electricity	
			After December 31, 2012, the	utilizing by-products of the	
			incineration of solid waste	pulping process and wood	
			shall not be eligible to generate	manufacturing process (in-state	
			renewable Energy credits.	resources are now Tier 1).	
				(7) Integrated combined coal	
A 14		T:1 \$40 / M321	T: 1 \$500 (W/L	gasi nearon teennology.	\$25 C 1 St 1. C
Compliance	Class I & II (ACP) - \$50/MWh Solor (SACP) was \$300/MWh	Tion 2 \$15 / MWh	Tion 2 \$10/MWh	sate (MWL)	\$50 for 2 nd deficient year.
Dorment	initially For 2008/2000 it is	Solar \$400 / MWh in 2000	Solar \$500/MWh in 2011 thm	Solar 200% of the overage	\$20 for subsequent years
(ACP)	\$711/MWh declining to \$730 in	thru 2014 declining to \$50 /	2016 \$350 in 2017 declining	mark et value for solar PECs	Solar A CP is \$400 \$450 and
(ACT)	2027/28	MWh in 2023	to \$50 in 2023 and thereafter	sold in the DTO	\$500 respectively
L	202 1120.	1VI W II III 2023	to \$50 m 2025 and mercanter	solu in ule KTO.	aboo, respectively.

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		NJ	1			М)			DO	C		PA			DE			
Beneficiary of	ACP's fund renewable energy MD Strategic Energy					DC Rer	DC Renewable Energy PA's Sustainable ?			A's Sustainable Energy Delaware Green Ene			Green Ener	gy Fund					
ACP	projects through the Clean Investment Fund, to be used to						sed to	Development Fund, to be used			Funds, to fund projects that								
	Energy Pr	rogram.	SACP's	will	support the creation of Tier 1			to support the creation of new			increas	e electri	e Energy	r i					
	be refund	ed to rate	payers	as a	and sola	r sources	in the s	tate.	solar sources in the District.			generated from alternative			ve				
	result of A	A.B. 3520	Э.										Energy	resoure	es.				
Solar	Yes, see l	pelow.	-		Yes, see	below.			Yes, see	e below.			Yes, se	e below	6. •		Yes, see b	elow.	
Requirements	Solar AC	P Schedu	ile:	¢ 070															
	2010: \$693	2010. \$32	5 2025.	\$266															
	2011: \$675	2018: \$30	8 2025:	\$260															
	2012:\$658	2019: \$30	0 2026:	\$253															
	2013: \$041 2014: \$339	2020:\$29	6 2027:	\$230 \$239															
	2015: \$331	2022: \$27	9									~~~							~
RPS			đ			Tier I				Tier 1				Tier I					an el
Percentages	Solar	Class I	Class II	Total	Solar	(incl solar)	Tier 2	Total	Solar	(incl solar)	Tier 2	Total	Solar	(incl solar)	Tier II	Total	n/a	Solar	lotal (incl solar)
2004, or 04/05	0.010	0.740	2.5	3.25															
2005, or 05/06	0.017	0.983	2.5	3.5															
2006, or 06/07	0.0393	2.037	2.5	4.5763	0.000	1.0	2.5	3.5					.0013	1.5	4.2	5.7			
2007, or 07/08	0.0817	2.924	2.5	5.5057	0.000	1.0	2.5	3.5	0.005	1.5	2.5	4.0	.0030	1.5	4.2	5.7			2.0
2008, or 08/09	0.160	3.840	2.5	6.5	0.005	2.005	2.5	4.505	0.011	2.0	2.5	4.5	.0063	2.0	4.2	6.2		0.011	3.0
2009, or 09/10	0.221	4.685	2.5	7.406	0.010	2.01	2.5	4.51	0.019	2.5	2.5	5.0	.0120	2.5	4.2	6.7		0.014	4.0
2010, or 10/11	306 GWh	5.492	2.5	8.297	0.025	3.025	2.5	5.525	0.028	3.0	2.5	5.5	.0203	3.0	6.2	9.2		0.018	5.0
2011, or 11/12	442 GWh	6.320	2.5	9.214	0.050	5.0	2.5	7.5	0.400	4.0	2.5	6.5	.0325	3.5	6.2	9.7		0.20	7.0
2012, or 12/13	596 GWh	7.143	2.5	10.388	0.100	6.5	2.5	.9.0	0.500	5.0	2.5	7.5	.0510	4.0	6.2	10.2		0.40	8.5
2013, or 13/14	2.05	7.977	2.5	12.527	0.250	8.2	2.5	10.7	0.500	6.5	2.5	9.0	.0840	4.5	6.2	10.7		0.60	10.0
2014, or 14/15	2.45	8.807	2.5	13.757	0.350	10.3	2.5	12.8	0.600	8.0	2.5	10.5	.1440	5.0	6.2	11.2		0.80	11.5
2015, or 15/16	2.75	9.649	2.5	14.899	0.500	10.5	2.5	13.0	0.700	9.5	2.5	12.0	.2500	5.5	8.2	13.7))	1.00	13.0
2016, or 16/17	3.00	10.485	2.5	15.985	0.700	12.7	2.5	15.2	0.825	11.5	2.0	13.5	.2933	6.0	8.2	14.2		1.25	14.5
2017, or 17/18	3.20	12.325	2.5	18.025	0.950	13.1	2.5	15.6	0.980	13.5	1.5	15.0	.3400	6.5	8.2	14.7		1.50	16.0
2018, or 18/19	3.29	14.175	2.5	19.965	1.400	15.8	2.5	18.3	1.150	15.5	1.0	16.5	.3900	7.0	8.2	15.2		1.75	17.5
2019, or 19/20	3.38	16.029	2.5	21.909	1.750	17.4	0.0	17.4	1.350	17.5	0.5	18.0	.4433	7.5	8.2	15.7	Q	2.00	19.0
2020, or 20/21	3.47	17.88	2.5	23.85	2.000	18.0	0.0	18.0	1.580	20.0	0.0	20.0	.5000	8.0	10.0	18.0	4	2.25	20.0
2021, or 21/22	3.56	17.88	2.5	23.94	2.000	18.7	0.0	18.7	1.850	20.0	0.0	20.0						2.50	21.0
2022, or 22/23	3.65	17.88	2.5	24.03	2.000	20.0	0.0	20.0	2.175	20.0	0.0	20.0						2.75	22.0
2023, or 23/24	3.74	17.88	2.5	24.12					2.500	20.0	0.0	20.0	· · · ·					3.00	23.0
2024, or 24/25	3.83	17.88	2.5	24.21														3.25	24.0
2025, or 25/26	3.92	17.88	2.5	24.30														3.50	25.0
2026, or 26/27	4.01	17.88	2.5	24.39															
2027, or 27/28	4.10	17.88	2.5	24.48					-										

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	L	ОН	NC	MI	WV
Regulation or Legislation	Public Act 095-0481, the Illinois Power Agency Act of August 2007 PA 096-159 (Aug 2009) SB1652 (10/26/2011)	SB 221 (May 2008) SB 315 (9/10/2012)	SB 3 (August 2007) SB 75 (April 2011)	Public Act 295, (October 6, 2008)	HB 203 (June 2009) HB 408 (Nov 2009) SB 350 (April 2010)
Geographie Eligibility	Eligible resources must be located in IL. If there are insufficient cost-effective in- state resources, resources can be procured from adjoining states, and if these are also not cost-effective, resources can be procured from other regions of the country.	At least 50% of the renewable energy requirement must be met by in-state facilities and the remaining 50% with resources that can be shown to be deliverable into the state.	Utilities may use unbundled RECs from out-of-state renewable energy facilities to meet up to 25% of the portfolio standard. Qualifying out-of-state facilities are (1) hydroelectric power facilities with a generation capacity up to 10 MW, or (2) renewable energy facilities placed into service on or after January 1, 2007.	Renewable energy credits used to satisfy the renewable energy standards shall be either 1) located anywhere in this state or 2) located outside of this state in the retail electric customer service territory of a utility recognized by the Michigan PSC.	Electricity must be generated from a facility located in West Virginia or in the PJM service territory
Reporting	June 1 st to May 31 st . Compliance reports due 9/1	January 1 st to December 31 st .	January 1 st to December 31 st .	January 1 st to December 31 st .	January 1 st to December 31 st .
Banking		RECs have a lifetime of five years following their purchase or acquisition	On or after January 1, 2008 an Energy supplier can receive and accumulate RECs. Excess REC's can be applied to the next year's compliance target.		An electric utility may bank credits and use them to meet the Portfolio Standard requirement in a subsequent year.
Credit Multipliers	No	No	Triple credit for every one REC generated by the first 20 MW of a biomass facility located at a "cleanfields renewable energy demonstration park."	 Solar receives an additional 2 credits per MWh Lesser bonuses awarded for on-peak production, storage, and using in-state labor or equipment 	 One credit for each MWh of electricity from an alternative energy resource facility. Two credits for each MWh of electricity from a renewable energy resource facility Three credits for each MWh of electricity from a renewable energy resource facility located on a reclaimed surface mine in West Virginia

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	L	OH	NC	MI	WV
Technology - Specific Requirements (set asides)	 Wind (IOUs): 75% Wind (ARES): 60% Solar PV: 6% for compliance year 2015-2016 and after Distributed Gen (IOUs): 1% 	0.5% from solar energy resources by 12/31/2024.	 0.2% solar by 2018 0.2% energy recovery from swine waste by 2018 900,000 MWh of electricity derived from poultry waste by 2015. 	None.	None.
Renewable Energy Sources	Renewable energy resources: • wind, • solar thermal energy, photovoltaic cells and panels, • biodiesel, • crops and untreated and unadulterated organic waste biomass, • tree waste, • anaerobic digestion, • in-state landfill gas, • hydropower that does not involve new construction or significant expansion of hydropower dams, and • "other alternative sources of environmentally preferable energy."	Renewable Energy sources: • solar photovoltaics (PV), • solar thermal, • wind, • geothermal, • biomass, • biologically derived methane gas, • landfill gas, • certain non-treated waste biomass products, • fuel cells that generate electricity and • qualified hydroelectric facilities. • certain cogeneration and waste heat recovery system technologies	Renewable sources: • solar-electric photovoltaics, • solar thermal, • wind, • hydropower up to 10 MW, • ocean or wave energy, • biomass, • landfill gas, • waste heat from renewables, and • hydrogen derived from renewables. • energy efficiency technologies (up to 25% of requirement), including CHP systems powered by non-renewable fuels. • electricity demand reduction (up to 100%)	Eligible Renewables include: • biomass, • solar and solar thermal, • wind, • landfill gas, • water released through a dam, • waves, tides, or currents, • geothermal, • municipal solid waste Credits from Energy Optimization and Advanced Cleaner Enegry Systems (defined below) can be used to satisfy up to 10% of the renewable energy requirement	Renewable Energy Resources include: solar-electric, solar thermal energy, wind power, run-of-river hydropower, geothermal energy, fuel cells, recycled energy e certain biomass energy and biologically-derived fuels
Alternative Energy Sources	 Distributed generation: must be 2 MW or less and powered by wind, solar thermal, PV, biodiesel, biomass, tree waste, or hydropower. must be interconnected on the customer side of the electric meter at the distribution system level. distributed generation may also count toward the wind and solar requirements. 	Advanced Energy Resources include: o clean coal; egeneration III advanced nuclear power; distributed combined heat and power (CHP); i fuel cells that generate electricity; certain solid waste conversion technologies; and demand side management or efficiency improvements any new, retrofitted, refueled, or repowered generating facility in Ohio	n/a	Energy Optimization may include: energy efficiency, load management, or energy conservation. Advanced Cleaner Energy System is any of the following: Gasification, industrial cogeneration, and coal-fired facilities that capture and sequester (CCS) 85% of carbon dioxide emissions	Alternative Energy Resources include: coal technology, coal bed methane, natural gas, fiel produced by coal gasification or liquefication synthetic gas, integrated gasification combined cycle technologies, waste coal, tire-derived fuel, pumped storage hydro

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	п		ОН			NC			MI		WV						
Alternative	For compliance year June 1,			REC - \$4:	5/MWh		None.	Recover	able cos	ts are	Not appli	icable for the		Compliance assessment shall			
Compliance	2012 to May 31, 2013, the				Solar – \$450/MWh in 2009,			capped.			Renewable Energy		equal the lesser of the				
Payment	ACP is \$9.55/REC for ARES				\$400 in 2010 and 2011,		100000			Requirement.		following:					
(ACP)	operating in Ameren territory			reduced by \$50 every two								1. \$50 per credit					
	and \$13	.89/REC	for AR	ES	years thereafter.							2. 200% of the average					
	operating in ComEd territory				~~								market value of credits used for compliance in a				
							Second Sec.			in the		given year.					
Beneficiary	Renewable Energy Resources			Ohio Advanced Energy Fund,		n/a			n/a		Energy Deservation Renewable						
of ACP	Fund				which provides financial support to renewable energy and energy efficiency projects within the state.							Energy Resources Research Fund, used to award matching grants for projects relating to alternative and renewable energy resources and energy					
	Alternative Suppliers must meet at least 50% of their																
	Tenewaote quota unough ACTS.																
												efficiency technologies.					
Solar	Yes, see below.			Yes, see b	s, see helow.			Yes, see below.			n/a		n/a				
Requirements																	
-	Fo	For Electric Utillities:								10 102							
RPS	100.08 0000	25.25	Dist.	1000 AL	1	42 - 54			Swine	Poultry							2013 - AC
Percentages	Wind	Solar	Gen.	Total		Solar	Total	Solar	Waste	(GWh)	Total			Total		5	Total
2008, or 08/09	1.5			2.0%													
2009, or 09/10	3.0			4.0%		0.004%	0.25%										
2010, or 10/11	3.75			5.0%		0.010%	0.50%	0.02%									
2011, or 11/12	4.50			6.0%		0.030%	1.0%	0.02%			-				-		
2012, or 12/13	5.25	0.0035		7.0%		0.060%	1.5%	0.07%	0	0	3.0%			2%			
2013, or 13/14	6.00	0.12	0.040	8.0%		0.090%	2.0%	0.07%	0.07%	170	3.0%		3	3.33%			
2014, or 14/15	6.75	0.27	.0675	9.0%		0.12%	2.5%	0.07%	0.07%	700	3.0%			5%		0.	100/
2015, or 15/16	7.50	0.60	0.100	10.0%		0.15%	3.3%	0.14%	0.14%	900	6.0%	2		10%		5	10%
2016, or 16/17	8.625	0.69	0.115	11.5%		0.18%	4.5%	0.14%	0.14%	900	6.0%						10%
2017, or 17/18	9.975	0.78	0.130	13.0%		0.22%	3.3%	0.14%	0.14%	900	6.0%						10%
2018, or 18/19	10.875	0.87	0.145	14.5%		0.20%	0.3%	0.20%	0.20%	900	10.0%		+ +				10%
2019, or 19/20	12.00	0.96	0.160	16.0%		0.30%	1.3%	0.20%	0.20%	900	10.0%						10%
2020, or 20/21	13.125	1.05	0.175	17.5%	-	0.34%	8.3%	0.20%	0.20%	900	10.0%						15%
2021, or 21/22	14.25	1.14	0.190	19.0%		0.38%	9.3%	0.20%	0.20%	900	12.5%						15%
2022, or 22/23	15.375	1.23	0.205	20.5%		0.42%	11.5%			-	12					12.	13%
2023, or 23/24	16.50	1.32	0.220	22.0%	-	0.40%	11.5%		-	-	é.	-			1	j.	15%
2024, or 24/25	17.625	1.41	0.235	23.5%		0.30%	12.5%		· · · · · · · · · · · · · · · · · · ·								13%
2025, or 25/26	18.75	1.50	0.250	25.0%											L		25%

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	VA	IN	KY	TN	
Regulation or Legislation	SB 1416 (2007) HB 1994 (2009)	SB 251 (May 2011)	None.	None.	
	HB 1022 (7/2010)				
	HB 232 and HB 1102 (7/2012)				
Gaaamahia	HB 2261 (2/2013)	Class an arrest must be compared at here			
Eligibility	purchased in Virginia or in the	facility located in a control area that			
	interconnection region of the	is part of a regional transmission			
	regional transmission entity.	organization of which an electricity			
		supplier is a member. At least 50%			
Reporting	January 1st to December 31st.	January 1 st to December 31 st .			
Period	Reports due annually on	Reports due annually on March 1			
	November 1 st .	beginning in 2014			
Banking	Excess renewable energy				
	any future RPS goal.				
Credit	 Wind and solar power 	None.			
Multipliers	receive a double credit				
	toward RPS goals.				
Technology -	None.	None.			
Specific					
Requirements					
(set asides)	Fligible aparon recompany	Clean aperov recovered:			
Energy	solar.	wind: solar energy: photovoltaic cells			
Sources	• wind,	and panels; dedicated crops grown for			
	• geothermal,	energy production; organic waste			
	 hydropower, 	biomass; hydropower; fuel cells;			
	• wave,	energy facilities: energy storage			
	• tidal, • biomass energy	systems or technologies; geothermal			
	 landfill gas. 	energy; coal bed methane; industrial			
	Research and development	byproduct technologies that use fuel			
	expenses releated to	industrial process: waste heat			
	renewable energy can meet	recovery; demand side management			
	up to 20% of the RPS goal.	or energy efficiency initiatives;			

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