UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Solar Energy Industry Association	)	Docket No. RM12-10 -000 Docket No. AD 12-17

UNITED STATES CLEAN HEAT & POWER ASSOCIATION
SUPPLEMENTAL COMMENTS

The United States Clean Heat & Power Association ("USCHPA")[1] thanks the Commission for the opportunity to provide Supplemental Comments ("USCHPA Supplemental")[2] in the rulemaking occasioned by the petition of the Solar Energy Industries Association ("SEIA") filed on February 16, 2012 to update aspects of the small generator interconnection rules and procedures ("SGIP")[3]. USCHPA submitted a Motion to Intervene and Initial Comment ("USCHPA Initial") on March 27 2012. Initial and reply comments have been submitted and experts participated in several panels at a Technical Conference ("TC") held on July 17, 2012. USCHPA has examined the record, observed the TC and participated in the similarly functioning State-level Massachusetts DG Interconnection Working Group ("Mass DG IC WG").

USCHPA reiterates its position in agreeing with SEIA that the SGIP have become outdated in some ways and unduly discriminatory and creates unreasonable barriers to distributed generation ("DG") access to transmission and distribution facilities as the DG marketplace grows. USCHPA's Initial Comment[4] sought:

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[1] The U.S. Clean Heat & Power Association ("USCHPA") is the voice of the combined heat and power (CHP) industry. USCHPA is a trade association whose membership includes manufacturers, suppliers, and developers of combined heat and power (CHP) systems. It's interests are affected by rules under consideration in RM12-10.

[2] USCHPA responds to the request for comments issued by the Technical Conference Moderator on July 17, 2012.

[3] Standardization of Small Generator Interconnection Agreements and Procedures, Order No. 2006, FERC Stats. & Regs. ~ 31,180, ("Order No. 2006"), order on reh 'g, Order No. 2006-A, FERC Stats. & Regs. ~ 31,196 (2005) ("Order No. 2006-A"); order on reh'g, Order No. 2006-B, FERC Stats. & Regs. ~ 31,221 (2006) ("Order No. 2006-B").

[4] http://www.uschpa.org/files/public/USCHPA_Motion_to_Intervene%20in%20RM12-10%20FINAL.pdf

2. Reconsideration of the 15% of minimum line load screen in order to deal with the distinctions necessary for both smaller combined heat and power generation utilizing natural gas and other fuels in addition to solar resources as request by the petitioner,

3. Reduction in opportunities for line segment planners/managers to delay or discriminate in the processing of individual interconnection requests that is as great a problem for the CHP industry as it may be for the solar industry (we acknowledge that there are currently many more applications to interconnect solar facilities submitted to some structured electricity markets and transmission owners of FERC jurisdictional facilities than applications submitted for CHP facilities.)

4. Recognition that technological advances in measurement and sensing technology in the smarter grid environment is moving beyond the need for and use of arbitrary benchmarks in the planning process that constrain distributed resource deployment and utilization,

5. Routine availability to small generation developers and operators utilizing all fuels of line segment loading data by time intervals and other variables, including minimums, averages, maximums, network and zonal peaks and minimums as well as control area peaks and minimums,

6. Recognition that revision of the SGIP at FERC is precedential and can influence the simplification of interconnection procedures for generators utilizing all fuels at the State level.

7. Recognition that there are emerging micro-CHP technologies that may soon join PV as a mass deployment technology in the US and that there are more than 120,000 micro-CHP units in residences and small commercial establishments around the world. Most of micro-CHP applications fit within the under 10 kW category in SGIP. USCHPA will offer later in the proceedings a review of the under 10 kW screen, and

8. Recognition that interconnection for net metering is an opportunity for renewables in over forty states and that almost twenty states now allow net metering of CHP under a variety of conditions involving small generator and large generator facilities as defined by LGIP and SGIP. Does the SGIP process need to address whether a facility expects to net meter?

USCHPA expects that RM12-10 as finally resolved would apply to all types of generators, prime movers and fuel types utilized by small generators under 20 Megawatts (<20 MW). This Supplemental Comment further addresses the deployment of Combined Heat and Power plants in the United States in the context of deployment of alternative technologies and addresses selected issues that have surfaced in the instant docket and in the similarly purposed State level proceedings.

USCHPA believes that Panelist Rachel Peterson from the CPUC (July 17) summarized for nation the circumstance that is faced by CHP that falls into the Small Generator Category.

> Growth of emerging distributed generation market segments has contributed to the need for California to reform its distribution system interconnection standards
>
> > The advent of generating facilities selling their exported power and interconnecting to the utility distribution systems has placed new pressures on interconnection procedures in California, including: Generating facilities exporting power to the distribution system for sale make it more likely that aggregate generating capacity relative to line section load levels will exceed the 15% of peak load threshold present in Rule 21.

As small-scale (<20 MW) generating facilities exporting power to the distribution system for sale have become more common, efficient interconnection requires identifying technical conditions (e.g., size limits, relationship to load, absence of transmission constraints) permitting expedited interconnection or interconnection studies conducted for groups of projects. [5]

I. Supplemental Comment

USCHPA's Supplemental Comment addresses:

1. USCHPA's position regarding "Gridlocked CHP." – Also Attachment A.
2. Key topics discussed at Technical Conference on July 17, 2012
    a. Fast Track Interconnection Process
        i. USCHPA favors increasing the size screens to 10 MW to allow simplified processing for CHP and other facilities. This is a position evidenced within the ACEEE 2011 CHP Scorecard Report which surveyed knowledgeable experts and practitioners throughout the CHP Industry. It is consistent with USCHPA's internal reviews.
        ii. USCHPA supports SEIA's position for PV that the minimum share of line segment loading concept should apply to mid-day hours. For all other generating technologies the position adopted in the California Rule 21 settlement (not yet approved by the CPUC) is appropriate, i.e. use absolute minimum load.[6]

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[5] Rachel Peterson, California Public Utilities Commission, Energy Division, California Distribution System Interconnection Standards, Proposed Technical Advances and Policy Considerations Relevant to Proposed Rulemaking to Address Small Generator Interconnection Procedures, Presented to the Federal Energy Regulatory Commission Washington, D.C. Technical Conference, Docket No. AD12-17-000 July 17, 2012, p. 6.
[6] Peterson, p. 16.

iii. USCHPA supports mandated timetables for interconnection processing a feature that was recently legislated and signed into law in Massachusetts.[7]

b. Load Data Collection

i. The emergence of smarter grid capabilities should be accelerated in order to provide better data, including minimum daily load data.

c. Review of Required Upgrades

i. USCHPA takes the position that CHP and other distributed generation facilities should not solely bear the burden of updating obsolete transmission and distribution infrastructure that needs to be upgraded regardless of new generation facilities being interconnected to the existing electric grid.

ii. As part of utility system limitations on fault current interrupting ratings of their substations, it is not uncommon that addition of Current Limiting "Fast Fuses" (i.e., Power Assisted Fuses, CLiP Devices, etc.), "DC Link" Power Converters or Line Reactors are required at each CHP interconnect. These fault mitigation devices cause increased cost to the projects. It is not uncommon that addition of increased electrical room footprints and protection devices could represent $1 Million of a $20 Million project. Too often the fault mitigation equipment is required

[7] Senate Bill No. 2395, Signed by Massachusetts Governor Patrick on August 3, 2012
SECTION 49. The department of public utilities shall develop an enforceable standard
715 interconnection timeline for the interconnection of distributed generation facilities. Timelines
716 may vary depending on the size and type of the facility or other factors as determined by the
717 department. The department shall implement such timeline not later than November 1, 2013.
718 The department shall enforce established timelines as part of its service quality standards review
719 under section 1I of chapter 164 or by whatever enforcement mechanism is determined
720 appropriate by the department.

solely to accommodate for obsolescence of aged utility substation switchgear. In essence, CHP projects are unduly burdened. Further, it likely that modernization of the utility substations would represent a lower net cost that the aggregate cost of multiple CHP projects coerced to correct for this deficiency.

iii. Many (most) of the gridlocked sites CHP sites have redundant capacity in the form of standby equipment typically with capacity equal to the size of the CHP generator. If rendered dispatchable, this could be a valuable asset that would certainly make more sense than costs incurred by State regulatory bodies providing reliability-must-run agreements to obsolete power stations or worse still power purchase agreements for large gas turbine peakers that almost never get called to run.

d. The Commission should determine how to account for small generation resources, including CHP, in determining penetration levels (behind-the-meter or adjacent load only = no effect, export = some effect, demand response = net differential effect, net metering = net differential effect, others);

e. The Commission should consider cost allocation issues associated with clusters of projects on line segment or nearby (electrically). The integration of variable generation renewables can affect the established electrical regimen of existing small generating facilities. For the many CHP projects that are well established (see further presentations in Attachment A) could be affected electrically and economically by the addition of other new generation resources on the line segment, e.g. when a campus energy system with a long established CHP

facility at the Medical Center now proposes to establish a sizeable PV installation at another budget center at the electrical edge of the facility. This phenomenon will raise cost burden issues such as have been experienced by Large Generator queues processed under the Large Generator Interconnection Procedures ("LGIP")

II. USCHPA's position regarding "Gridlocked CHP"

In its Initial Comment, USCHPA indicated that 82 GW of CHP[8] currently operates in the US but much CHP capability is "gridlocked. [9]" There are 3075 CHP projects < 20 MW totaling 6.7 GW in installed capacity.[10] Most of these CHP projects have not interconnected under the direct application of the FERC Small Generator Interconnection Procedures ("SGIP") and Small Generator Inteconnection Agreements ("SGIA") of 2005. But many have been interconnected under practices developed by States considering the SGIP as a model. Since the beginning of 2005, 901 CHP projects totaling 4.8 GW averaging 5.1 MW per site have gone operational.[11] The authors want to update the reported rate of growth in CHP capacity from 2005-2010 (1.7 GW) quoted in the Initial Comment that had been obtained from a secondary source using preliminary data. The correct growth number from the primary source is reported above. The average plant size over this period is well under the <20 MW Small Generator benchmark used for interconnection processing. There is ample rationale for the

[8] CHP Installation Database Summary Tables. Produced from CHP Installation Database (http://www.eea-inc.com/chpdata/index.html), Maintained by ICF International for Oak Ridge National Laboratory. 2012

[9] USCHPA, Initial Comment, p. "Based upon historical patterns of usage contained to the generating "site" and immediate environs and historical patterns of interconnection arrangements much of the Nation's CHP capability is "gridlocked." USCHPA's interest in this proceeding to help unlock existing and new CHP capability that would otherwise be "gridlocked", that is, "unlock gridlocked" small generation resources and make them accessible to the smarter grid. The existing stock of CHP is the prime candidate for evolution into microgrids which can isolate under certain conditions but which can interact with the grid under other conditions. National policy dictates that microgrids are one of the tripod legs of the nation's smart grid policy. (USDOE, July 2009)"

[10] There are 651 CHP projects >=20 MW totaling 74.9 GW. (Source CHP Installation Database Summary Tables)

[11] op. cit.

Commission to take steps to reduce the barriers to expedited interconnection processing for CHP interconnections by transmission providers.

"Gridlocked CHP" may offer substantial potential strength and flexibility to structured electricity markets (RTOs/ISOa) and the entire grid system that becomes more available as smart grid and microgrid policies and practices take root.

In an effort to create greater understanding and appreciation for the value of expediting the interconnection of CHP, USCHPA offers an evaluation of the deployment and utilization of CHP as evident in Energy Information Administration ("EIA") collected and distilled data for 2010 and then for May 2012.[12] Attachment A examines the capacity of and generation by CHP and other plants utilizing the Annual Existing Capacity Data for 2010 from EIA Form 860[13], the Final 2010 CHP Plant Generation Data[14] obtained from EIA Form 923 and the May 2012 Generation Plant Data[15] from EIA.

Efficient CHP plants utilizing a variety of fuel sources continue to be developed.

The Early Release of EIA Form 860 data (2011)[16] for proposed plants indicates 37 CHP plants expect to be completed by 2016. While cautioned against utilizing unedited data for aggregation it is apparent that over 4 GW of additional CHP capacity revealed via Form 860 data is in development and 13 of these are <20 MW with a combined total of 70 MW. This is only a fraction of the CHP development experienced in recent years as evidenced in the Oak Ridge CHP database referenced above. It is likely that the Oak Ridge CHP database may show twice as much CHP capacity in the development pipeline.

[12] See Attachment A.
[13] http://www.eia.gov/electricity/data/state/Existcapacity_annual.xls
[14] http://www.eia.gov/electricity/data/eia923/xls/f923_2010.zip
[15] Sources: Form EIA-860, "Annual Electric Generator Report" and Form EIA-923, "Power Plant Operations Report"
[16] EIA 860 GeneratorsY2011 - Proposed CHP.xls

The Initial Comment argued that much CHP capability is "gridlocked" and not available for external purposes because it is limited by interconnection arrangements, institutional limitations and economics. For CHP projects no larger than twenty megawatts (=<20 MW) most CHP projects have not interconnected under the direct application of the FERC SGIP. These are largely what we are calling "gridlocked" sites. They may offer substantial potential strength and flexibility to structured electricity markets and the entire grid system that becomes more available as smart grid and microgrid policies and practices take root.

The examination of EIA's generation data for 2010 shows that approximately half the electricity (generation) of the existing plants is available for export through retail sales, wholesale sale for resale or other transfers. Note however, the 12 GW covered by the more comprehensive Oak Ridge CHP database may not be visible in the EIA for a variety of reasons, including the fact that much of it may be "gridlocked" because it could not afford to interconnect economically and expeditiously. The gridlocked concern will still apply to many existing small CHP systems and new ones that are being developed across the country.

III. COMMUNICATIONS

All communications with USCHPA regarding this matter should be addressed to:

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IV. CONCLUSION

USCHPA respectfully requests that the Commission accept its recommendations rulemaking to update certain provisions of Order No. 2006 consistent with the findings and recommendations herein.

Respectfully submitted this 13th day of August 2012,

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ATTACHMENTS:

Examination of the "Gridlocked CHP"

USCHPA's Initial Comment argued that much CHP capability is "gridlocked" and not available for external purposes as it is limited by interconnection arrangements and institutional limitations.

In an effort to create greater understanding and appreciation for the value of expediting the interconnection of CHP, USCHPA offers an evaluation of the deployment and utilization of CHP as evident in Energy Information Administration ("EIA") collected and distilled data for 2010 and then for May 2012.[17] Attachment A examines the capacity of and generation by CHP and other plants utilizing the Annual Existing Capacity Data for 2010 from EIA Form 860[18], the Final 2010 CHP Plant Generation Data[19] obtained from EIA Form 923 and the May 2012 Generation Plant Data[20] from EIA.

The Annual Existing Capacity Data for 2010 from Form 860 reports was examined to determine the extent of utilization of CHP generation in relation to other categories of generation. The year 2010 was examined because the final analysis of generation data from Form 923 reports has been completed and the data can be used reliably for aggregation purposes. The 2011 data cannot yet be used for purposes of aggregation. Only sites one megawatt or above (1 MW) are required to report this data. See requirements below when discussing the EIA Form 923 Instructions. Many CHP projects recognized in the Oak Ridge CHP database do not appear in the EIA data or may be miss-characterized. There could be a divergence of as much at 12 GW.

INSTALLED CHP COMPARED TO OTHER INSTALLED CAPACITY IN 2010

Exhibit A has been extracted from the Existing Capacity Data and shows three main types of

[17] See Attachment A.
[18] http://www.eia.gov/electricity/data/state/Existcapacity_annual.xls
[19] http://www.eia.gov/electricity/data/eia923/xls/f923_2010.zip
[20] Sources: Form EIA-860, "Annual Electric Generator Report" and Form EIA-923, "Power Plant Operations Report"

CHP as reported on EIA forms (1) CHP – Commercial Power, (2) CHP – Electric Power and (3) CHP – Industrial Power. It also shows Electric Generation by Utilities and by Independent Power Producers. It reports the data by fuel sources in each category (each type of CHP, Electric Utilities and Independent Power Producers. For example, there were seven (7) producers of Solar Thermal and PV CHP (Commercial) with installed capacity of 6 MW and 6 MW of summer capacity and two (2) producers of Solar Thermal and PV CHP (Industrial) with installed capacity of 4 MW and 1 MW of summer capacity. By comparison as one can see below, there are many more Solar Thermal and PV producers, projects and capacity deployed by Electric Utilities and Independent Power Producers.

However, there were 1,154 producers of CHP with all fuel sources, including the solar thermal and PV CHP above, with nameplate ratings totaling 76 GW (75,708 MW) available to provide Summer Capacity of 66 GW (66,097 MW)[21]. The nameplate ratings were 7% of the Total Electric Industry and the Summer Capability is 6% of the Total Electric Industry. Note that the more complete Oak Ridge CHP database would have show 82 GW of CHP in August 2012.

By comparison, Electric Generators (Electric Utilities) had 3,092 producers with nameplate ratings of 655 GW available to provide Summer Capacity of 602 GW. Note that solar thermal and PV electricity was provided by 29 producers with 155 MW (.155 GW) available to provide Summer Capacity of 154 MW (.154 GW). The nameplate ratings were 58% of the Total Electric Industry and the Summer Capability is 53% of the Total Electric Industry.

By comparison, Electric Generators (Independent Power Producers) had 2,171 producers with nameplate ratings of 408 GW available to provide Summer Capacity of 371 GW. The nameplate ratings were 36% of the Total Electric Industry and the Summer Capability is 33% of the Total Electric Industry. Solar thermal and PV electricity was provided by 80 producers with 823 MW (.823 GW)

[21] Hereinafter, only GW numbers will be shown unless the amounts are less that 1 GW.

available to provide Summer Capacity of 780 MW (.78 GW).

Overall, the Total Electric Industry had 6,417 producers with nameplate ratings of 1,139 GW available to provide Summer Capacity of 1,039 GW. The nameplate ratings were 100% of the Total Electric Industry and the Summer Capability is 100% of the Total Electric Industry. Solar thermal and PV electricity was provided by 118 producers with 987 MW (.987 GW) available to provide Summer Capacity of 941 MW (.94 GW). The nameplate ratings for solar thermal and PV were 0.09% of the Total Electric Industry and the Summer Capability is 0.09% of the Total Electric Industry.

Regaining perspective on CHP, in its several forms CHP represented 7% of the nameplate ratings of the Total Electric Industry and 6% of the Summer Capability of the Total Electric Industry, including a fraction provided by solar thermal and PV. CHP, as a more mature industry, represented over eighty times greater capacity than solar thermal and PV at this stage in their evolution.

ANNUAL GENERATION BY CHP RESOURCES IN 2010 (AS REPORTED ON FORM 923).

In its Initial Comment USCHPA introduced the concept of "gridlocked" CHP suggesting that much CHP capability may not be able to participate in grid opportunities to obtain value from energy (generation), capacity, ancillary services and/or demand response. These issues go beyond interconnection but need to be clarified in light of our review of the Final 2010 CHP plant generation data[22] for 827 CHP plants reported in the EIA Form 923[23] to examine the extent to which these CHP

[22] http://www.eia.gov/electricity/data/eia923/xls/f923_2010.zip
The Final 2010 Report was not available until November 2011. The 2011 data is not yet suitable for aggregation. This Report was accessed and analyzed by The E Cubed Company, LLC on August 10, 2012.

[23] **U.S. Department of Energy U.S. Energy Information Administration Form EIA-923 (2012) *POWER PLANT OPERATIONS REPORT INSTRUCTIONS*, Required Respondents**

> The Form EIA-923 is a mandatory report for all electric power plants and CHP plants that meet the following criteria: 1) have a total generator nameplate capacity (sum for generators at a single site) of 1 megawatt (MW) or greater; and 2) where the generator(s), or the facility in which the generator(s) resides, is connected to the local or regional electric power grid and has the ability to draw power from the grid or deliver power to the grid. To lessen the reporting burden, a sample of plants is collected on a monthly basis. Plants that are not selected to respond monthly must respond annually for the calendar year.

plants export electricity and therefore require reliable interconnection whether to FERC jurisdictional or to State jurisdictional facilities. Exhibit B summarizes sources and disposition of electricity for these 827 CHP plants.

While larger new CHP facilities are not being developed currently at the pace of PV facilities that are a driving force in the instant Docket, USCHPA wants to optimize the interconnection opportunities for existing CHP facilities that may or may not become the cornerstone of new microgrids as well as for new CHP facilities, especially those in the Small Generator Category.

Turning to Exhibit B, aggregated data has been entered upon a page taken from the Form 923 report that is used by each reporting entity to indicate the following categories of information.

The 827 CHP plants examined had gross generation of 316,703,609 MWh (82%). The plants were supplemented by other incoming electricity of 70,078,338 MWh (18%) for total sources available to the plants' hosts of 386,781,947 MWh (100%). Station use took 3% and Direct Use took 47% rounding up to 51% for Total Facility Use. Retail Sales were 3%, Sales for Resale were 44% and Other Outgoing Electricity were 3% for the balance of the Total Disposition (100%). Total Sources equaled Total Disposition.

In short, based upon the 2010 data approximately half the electricity (generation) of the existing CHP plants for which data is reported is available for export through retail sales and wholesale sale for resale or other transfers. This data analysis suggests that the "gridlocked" CHP argument may not apply to existing CHP capacity that could afford to interconnect economically and expeditiously. However, it may still apply to the many smaller CHP systems that are being developed across the country.

REPORTED CHP CAPACITY AT MAY 2012

The May 2012 data on power plants[24] was analyzed to determine size ranges in relation to the Small Generation Cap of <20 MW. This data was derived from 805 CHP plants with 70 GW of installed capacity. Sites range in size from 1 MW to 1,853.8 MW. There are 321 CHP plants under 20 MW with a combined capacity of 2.2 GW. Of this 245 CHP plants are under 10 MW[25] with a combined capacity of 1.2 GW and 76 CHP plants are between 10 and 20 MW with a combined capacity of 1.05 GW. There are 484 CHP plants larger than 20 MW with a combined capacity of 68 GW.

Generation capacity that is not CHP was also examined to determine the total population of <20 MW plants and >20 MW plants.

There are 1308 non-regulated non-CHP plants <20 MW (6.9 GW) and 1258 regulated non-CHP plants <20 MW (8.2 GW) for a total of 2,566 plants <20 MW (15.1 GW). There are 1171 non-regulated non-CHP plants >20 MW (388 GW) and 1486 regulated non-CHP plants >20 MW (628 GW) for a total of 2,657 plants <20 MW (1,016 GW).

Overall there are 2,887 plants <20 MW and 3,141 plants >20 MW. The combined capacity of plants <20 MW is 17.3 GW. The combined capacity of plants >20 MW is 1,084 GW. The total capacity of 6,028 plants is 1,101 GW.

[24] Sources: Form EIA-860, "Annual Electric Generator Report" and Form EIA-923, "Power Plant Operations Report"
[25] A 10 MW benchmark for Interconnection simplification for CHP is advocated by ACEEE correspondents in the 2011 CHP Scorecard.

YEAR	STATE_CODE	PRODUCER_TYPE	FUEL_SOURCE	PRODUCERS (numbers	NAMEPLATE_CAPACITY (Megawatts)	EXISTING_SUMMER_CAPABILITY (Megawatts)
2010	**US-TOTAL**	**Combined Heat and Power**	**All Sources**	**1154**	**75,703**	**66,099**
		Percentage of Total Electric Industry		**18%**	**7%**	**6%**
2010	**US-TOTAL**	**Electric Generators, Electric Utilities**	**All Sources**	**3092**	**654,959**	**602,151**
		Percentage of Total Electric Industry		**48%**	**58%**	**53%**
2010	**US-TOTAL**	**Electric Generators, Independent Power Producers**	**All Sources**	**2171**	**407,978**	**370,887**
		Percentage of Total Electric Industry		**33.8%**	**35.8%**	**32.6%**
2010	**US-TOTAL**	**Total Electric Power Industry**	**All Sources**	**6417**	**1,138,638**	**1,039,137**
		Percentage of Total Electric Industry		**100%**	**100%**	**100%**
		DETAIL				
2010	**US-TOTAL**	**Combined Heat and Power, Commercial Power**	**All Sources**	**268**	**2,796**	**2,490**
2010	US-TOTAL	Combined Heat and Power, Commercial Power	Coal	17	444	418
2010	US-TOTAL	Combined Heat and Power, Commercial Power	Hydroelectric	9	36	22
2010	US-TOTAL	Combined Heat and Power, Commercial Power	Natural Gas	110	1,295	1,155
2010	US-TOTAL	Combined Heat and Power, Commercial Power	Other	1	7	3
2010	US-TOTAL	Combined Heat and Power, Commercial Power	Other Biomass	46	577	496
2010	US-TOTAL	Combined Heat and Power, Commercial Power	Other Gases	1	6	5
2010	US-TOTAL	Combined Heat and Power, Commercial Power	Petroleum	70	408	368
2010	US-TOTAL	Combined Heat and Power, Commercial Power	Solar Thermal and Photovoltaic	7	6	6
2010	US-TOTAL	Combined Heat and Power, Commercial Power	Wind	4	11	11
2010	US-TOTAL	Combined Heat and Power, Commercial Power	Wood and Wood Derived Fuels	3	9	8
2010	**US-TOTAL**	**Combined Heat and Power, Electric Power**	**All Sources**	**264**	**41,613**	**36,250**
2010	US-TOTAL	Combined Heat and Power, Electric Power	Coal	48	6,075	5,451
2010	US-TOTAL	Combined Heat and Power, Electric Power	Natural Gas	161	33,524	29,006
2010	US-TOTAL	Combined Heat and Power, Electric Power	Other Biomass	26	540	453
2010	US-TOTAL	Combined Heat and Power, Electric Power	Other Gases	2	152	182
2010	US-TOTAL	Combined Heat and Power, Electric Power	Petroleum	12	860	766
2010	US-TOTAL	Combined Heat and Power, Electric Power	Wood and Wood Derived Fuels	15	462	393
2010	**US-TOTAL**	**Combined Heat and Power, Industrial Power**	**All Sources**	**622**	**31,294**	**27,359**
2010	US-TOTAL	Combined Heat and Power, Industrial Power	Coal	80	4,344	4,010
2010	US-TOTAL	Combined Heat and Power, Industrial Power	Hydroelectric	47	357	341
2010	US-TOTAL	Combined Heat and Power, Industrial Power	Natural Gas	231	16,831	14,447
2010	US-TOTAL	Combined Heat and Power, Industrial Power	Other	25	936	804
2010	US-TOTAL	Combined Heat and Power, Industrial Power	Other Biomass	12	188	165
2010	US-TOTAL	Combined Heat and Power, Industrial Power	Other Gases	41	2,283	1,967
2010	US-TOTAL	Combined Heat and Power, Industrial Power	Petroleum	62	764	674
2010	US-TOTAL	Combined Heat and Power, Industrial Power	Solar Thermal and Photovoltaic	2	4	1
2010	US-TOTAL	Combined Heat and Power, Industrial Power	Wind	1	2	2
2010	US-TOTAL	Combined Heat and Power, Industrial Power	Wood and Wood Derived Fuels	121	5,585	4,948
2010	**US-TOTAL**	**Electric Generators, Electric Utilities**	**All Sources**	**3092**	**654,959**	**602,151**
2010	US-TOTAL	Electric Generators, Electric Utilities	Coal	333	254,543	235,707
2010	US-TOTAL	Electric Generators, Electric Utilities	Geothermal	3	258	159
2010	US-TOTAL	Electric Generators, Electric Utilities	Hydroelectric	888	72,260	72,974
2010	US-TOTAL	Electric Generators, Electric Utilities	Natural Gas	775	212,356	184,231
2010	US-TOTAL	Electric Generators, Electric Utilities	Nuclear	34	57,591	54,369
2010	US-TOTAL	Electric Generators, Electric Utilities	Other Biomass	37	346	325
2010	US-TOTAL	Electric Generators, Electric Utilities	Other Gases	3	680	539
2010	US-TOTAL	Electric Generators, Electric Utilities	Petroleum	868	32,973	28,972
2010	US-TOTAL	Electric Generators, Electric Utilities	Pumped Storage	34	17,698	18,969
2010	US-TOTAL	Electric Generators, Electric Utilities	Solar Thermal and Photovoltaic	29	155	154
2010	US-TOTAL	Electric Generators, Electric Utilities	Wind	79	5,638	5,338
2010	US-TOTAL	Electric Generators, Electric Utilities	Wood and Wood Derived Fuels	9	462	414
2010	**US-TOTAL**	**Electric Generators, Independent Power Producers**	**All Sources**	**2171**	**407,978**	**370,887**
2010	US-TOTAL	Electric Generators, Independent Power Producers	Coal	102	76,890	71,214
2010	US-TOTAL	Electric Generators, Independent Power Producers	Geothermal	55	3,240	2,246
2010	US-TOTAL	Electric Generators, Independent Power Producers	Hydroelectric	488	5,552	5,489
2010	US-TOTAL	Electric Generators, Independent Power Producers	Natural Gas	380	203,209	178,190
2010	US-TOTAL	Electric Generators, Independent Power Producers	Nuclear	32	49,139	46,798
2010	US-TOTAL	Electric Generators, Independent Power Producers	Other	6	84	77
2010	US-TOTAL	Electric Generators, Independent Power Producers	Other Biomass	286	3,394	2,930
2010	US-TOTAL	Electric Generators, Independent Power Producers	Other Gases	1	10	8
2010	US-TOTAL	Electric Generators, Independent Power Producers	Petroleum	191	27,500	24,867
2010	US-TOTAL	Electric Generators, Independent Power Producers	Pumped Storage	5	2,840	3,230
2010	US-TOTAL	Electric Generators, Independent Power Producers	Solar Thermal and Photovoltaic	80	823	780
2010	US-TOTAL	Electric Generators, Independent Power Producers	Wind	492	33,866	33,784
2010	US-TOTAL	Electric Generators, Independent Power Producers	Wood and Wood Derived Fuels	53	1,431	1,275
2010	**US-TOTAL**	**Total Electric Power Industry**	**All Sources**	**6417**	**1,138,638**	**1,039,137**

Source http://www.eia.gov/electricity/data/state/
Existcapacity_annual.xls

Accessed and analyzed by The E Cubed Company, LLC August 11, 2012

2010	US-TOTAL	Total Electric Power Industry	Coal	580	342,296	316,800
2010	US-TOTAL	Total Electric Power Industry	Geothermal	58	3,498	2,405
2010	US-TOTAL	Total Electric Power Industry	Hydroelectric	1432	78,204	78,825
2010	US-TOTAL	Total Electric Power Industry	Natural Gas	1657	467,214	407,028
2010	US-TOTAL	Total Electric Power Industry	Nuclear	66	106,731	101,167
2010	US-TOTAL	Total Electric Power Industry	Other	32	1,027	884
2010	US-TOTAL	Total Electric Power Industry	Other Biomass	407	5,043	4,369
2010	US-TOTAL	Total Electric Power Industry	Other Gases	48	3,130	2,700
2010	US-TOTAL	Total Electric Power Industry	Petroleum	1203	62,504	55,647
2010	US-TOTAL	Total Electric Power Industry	Pumped Storage	39	20,538	22,199
2010	US-TOTAL	Total Electric Power Industry	Solar Thermal and Photovoltaic	118	987	941
2010	US-TOTAL	Total Electric Power Industry	Wind	576	39,516	39,135
2010	US-TOTAL	Total Electric Power Industry	Wood and Wood Derived Fuels	201	7,949	7,037
		Aggregation for Solar Thermal and Photoelectric				
2010	**US-TOTAL**	**Total Electric Power Industry**	**Solar Thermal and Photovoltaic**	**1.84%**	**0.09%**	**0.09%**

Source http://www.eia.gov/electricity/data/state/
Existcapacity_annual.xls

Accessed and analyzed by The E Cubed Company, LLC August 11, 2012

U.S. Department of Energy U.S. Energy Information Administration Form EIA-923 (2012) – *Used for 2010 data*	***POWER PLANT OPERATIONS REPORT***	**Form Approval** **OMB No. 1905-0129** **Approval Expires: 10/31/2013** **Burden: 2.8 Hours**

Plant Name: _____Data for 827 CHP Plants listed in 2010 Final EIA-923 Report *_____

Plant ID: _____827 Plants_____ State: ____All__ Reporting Month/Year: ____Calendar 2010_____

SCHEDULE 6 collects calendar year data (no monthly detail).

Report all generation in megawatthours (MWh) rounded to a whole number.

Source of Electricity		**Disposition of Electricity**	
(1) Gross Generation (Annual)	316,703,609 (82%)	(4) Station Use	13,198,658 (3%)
(2) Other Incoming Electricity	70,078,338 (18%)	(5) Direct Use (Industrial and Commercial Sector Plants, both CHP and non-CHP)	183,235,172 (47%)
		(6) Total Facility Use (4 + 5)	196,433,830 (51%)
		(7) Retail Sales to Ultimate Customers	11,947,117 (3%)
		(8) Sales for Resale	168,396,022 (44%)
		(9) Other Outgoing Electricity	10,004,977 (3%)
(3) Total Sources (1 + 2)	386,781,947 (100%)	(10) Total Disposition (6 + 7 + 8 + 9)	386,781,946 (100%)
Total Sources must equal Total Disposition (3 = 10)			

* http://www.eia.gov/electricity/data/eia923/xls/f923_2010.zip

The Final 2010 Report was not available until November 2011. The 2011 data is not yet suitable for aggregation. This Report was accessed and analyzed by The E Cubed Company, LLC for USCHPA on August 10, 2012.

Size Distribution of CHP Plants
Reported in May 2012

Exhibit C

NON-Regulated CHP Plants Reported
May-12

	Number of CHP Plants	No. of MW
NR Count <10 MW	245	1199
NR Count 10 to 20 MW	76	1044.7
subtotal 1 to <20 MW	321	2243.7
NR CHP>20 MW	484	68077.8
NR CHP 1 to 1853.8 MW	805	70321.5

Sources: Form EIA-860, "Annual Electric Generator Report" and Form EIA-923, "Power Plant Operations Report"