MARINSA CARIBBEAN LLC
District View Plaza, Suite 302
644 Fernández Juncos Avenue
San Juan, PR 00902-3122
(787) 679-7002

Mr. Edison Avilés Deliz, President
Negociado de Energía de Puerto Rico
Edificio World Plaza
268 Muñoz Rivera Avenue
Plaza Level, Suite 202
Hato Rey, Puerto Rico 00918

July 3, 2019.

RE: Comments on current interconnection regulations

Dear Mr. Avilés:

As a stakeholder in the development of energy in Puerto Rico, we are writing to address concerns regarding and addressing concerns regarding the Puerto Rico Electric Power Authority's ("PREPA") current interconnection regulations in the light of Puerto Rico's Energy Public Policy Act (the "Act") dated April 11, 2019.

The Act provides that PREPA shall not longer have the exclusive right to produce, transmit, distribute and commercialize electric energy supply in Puerto Rico, while further providing for the integration of prosumers (consumers which generate energy and have the possibility of sharing excess energy with other users of the grid).

Among its guiding principles it provides as follows:

- The development and integration of solar communities, energy wheeling, community microgrids, and electric cooperatives, among others.
- Transitioning from a centralized system to a distributed generation system based on renewable energy.
- Designing and constructing a robust and resilient electric system that will survive severe weather events.

The Environmental Protection Agency ("EPA"), and several states (Texas, Connecticut, New Jersey) have adopted to facilitate the integration of prosumers as a source of resilient, reliable, and in some cases cheaper energy, particularly in the case of Combined, Heat & Power ("CHP") the Permits by Rule process to expediate the obtention of the air permits needed to establish these facilities. Attached hereto is a "Fact Sheet" from the CHP & EPA Combined Heat and Power Partnership, which seeks to promote the use of CHP, which much more eloquently than what we could write about provides (i) background on two streamlined permitting processes; to wit: permit

by rule ("PBR") and general permits ("GP"), (ii) describes the typical PBR/GP development process, and (iii) summarizes the PBR and GP programs developed by Connecticut, New Jersey, and Texas.

In these states the air regulatory agencies initiated these procedures for reasons like those exposed in the Act. While the adoption of a similar program in Puerto Rico will require action by the local Environmental Quality Board, and possible legislation, we urge your inclusion of such a program in your review of the interconnection regulations under review. The inclusion of such a program will increase the reliability resilience of the energy supply to the people of Puerto Rico, but must importantly preserve thousands of manufacturing jobs in much needed industrial plants located in the Island which at this moment are considering relocating to other jurisdictions which provide cheaper energy tariffs.

We appreciate your time and effort and strongly urge you to support this important program for the economic implications it has on our economy.

Due to the importance of implementing Permits by Rule in Puerto Rico, we are copying the Director of EPA's Caribbean Environmental Protection Division, Carmen Guerrero, as well as Atty. José E. González Aldarondo, Legal Counselor to Hon. Senator Larry Seilhamer, Puerto Rico Special Senate Commission on Energy Matters.

Cordially yours,

Raúl E. Matos
Managing Member
Marinsa Caribbean LLC
(787) 688-8907

CHP
EPA COMBINED HEAT AND POWER PARTNERSHIP

Approaches to Streamline Air Permitting for Combined Heat and Power: Permits by Rule and General Permits

Introduction

Combined heat and power (CHP) is an efficient and clean approach to generating electric power and useful thermal energy from a single fuel source. CHP is used either to replace or supplement conventional separate heat and power. Instead of purchasing electricity from the local utility and burning fuel in an on-site furnace or boiler to produce thermal energy, an industrial or commercial facility can use CHP to meet both energy services in one energy-efficient step.

In installing a CHP system, a facility is required to obtain permits from local authorities to set up the system, connect it to the local grid, and operate it in compliance with local and state regulations. To ensure compliance with air quality standards, a facility, in consultation with the state or local permitting agency, reviews air permitting requirements and then obtains a permit before the system is installed and operated.

CHP stakeholders have identified the process for obtaining air permits to be time and resource- intensive, and a potential impediment to CHP projects. In the past decade, and particularly in the past few years, several states – including Connecticut, New Jersey, and Texas – have introduced streamlined permitting procedures for certain types of CHP units in order to simplify and speed up the permitting process.

The U.S. EPA CHP Partnership developed this fact sheet to help policymakers and CHP advocates gain a better understanding of streamlined permitting procedures.

The EPA CHP Partnership is a voluntary program seeking to reduce the environmental impact of power generation by promoting the use of CHP. The Partnership works closely with energy users, the CHP industry, state and local governments, and other clean energy stakeholders to facilitate the development of new projects and to promote their environmental and economic benefits.

The fact sheet:

- Provides background on the two streamlined permitting processes: permit by rule (PBR) and general permits (GP).
- Describes the typical PBR/GP development process.
- Summarizes the PBR and GP programs developed by Connecticut, New Jersey, and Texas. State representatives from each state, as well as a CHP advocacy group in Texas, were interviewed on the reasons behind developing their expedited permit programs for CHP, the processes followed to develop the permit programs, the requirements of each permit program, and observations on the process for developing the programs, as well as the outcomes achieved.

The fact sheet does not serve as a guidance document, nor does it endorse any particular state approach to developing a CHP PBR/GP program. Instead, it serves as a resource to explain the factors that contributed to the development of PBRs/GPs and to share lessons learned during these processes.

What Are Permits by Rule and General Permits?

PBRs and GPs are alternatives to conventional air permits. Their purpose is to streamline the permitting process for both the permitting authority and the regulated source. Both PBRs and GPs are intended to reduce the time and cost involved in permitting eligible CHP units by consistently applying requirements that are pre-determined by the state across all applicable sources. The trade-off in applying for a PBR/GP is that, though they simplify the permitting of certain types of CHP, they may not necessarily apply to all CHP prime movers and fuel types. A CHP system that has other characteristics or that triggers major source[1] permitting requirements is not eligible to apply for a PBR/GP and must apply for either a conventional air permit or a New Source Review (NSR)[2] permit. Although PBR and GP programs are designed similarly, they are implemented differently.

PBRs are established as part of a state's regulations. Facilities that elect to obtain a PBR notify the permitting authority that they are utilizing the PBR and agree to comply with all of the requirements of the PBR. There is no permit application, no permit development process, and no public notice period. Sources are not issued a PBR; instead, they construct and operate under the requirements of the regulation. A source constructed and operated under a PBR is required to notify or register with the permitting authority. Procedures vary, and at times, an approval is not necessary.

GPs are developed according to procedures found in state regulations and can be expeditiously approved to permit a specific system. However, sources applying for a GP may need to wait for approval depending on the state permit jurisdiction.

Permit/Rule Development Process

During conversations with the permitting agencies in Connecticut, New Jersey, and Texas, general steps to develop a CHP PBRs/GPs were identified:

Step 1 - Define the scope of the PBR or GP. PBRs and GPs are typically written to cover specific equipment/units, and the regulatory requirements are defined to cover only these processes and equipment. A state regulatory agency would not develop a PBR/GP based on designs or operational situations that are so broad that the result is an undefined emissions profile. The PBRs/GPs developed in Connecticut, New Jersey, and Texas, for example, apply only to CHP using fossil fuels and primarily natural gas. CHP systems combusting landfill gas, digester gas, or other alternative fuels are not included and would need to obtain a conventional permit.

Modeling parameters play a critical role in the PBR/GP permit program development process. Modeling analyses define the scope of the PBR or GP and ensure that installations covered under the PBR or GP would not adversely impact the National Ambient Air Quality Standards (NAAQS). Because of the relatively high emissions of NOx from engines and turbines, the modeling analyses are considered critical for defining the applicability requirements that would not cause adverse impacts on the NAAQS. Other air quality modeling parameters are selected to conduct worst-case modeling scenarios to cover all locations in the state and to consider worst-case modeling conditions (e.g., a CHP system installed right on the property boundary, or the lowest stack height possible). To determine the size of a CHP system that would not affect the NAAQS, the size of the system is typically adjusted under different modeling runs. Likewise, other modeling parameters (e.g., stack height) could be varied (e.g., to allow for a larger unit). New Jersey's and Connecticut's rules, for example, include a minimum stack height as part of their PBR or GP.

The regulatory agency, in summary, makes sure that all applicable requirements are included and that eligibility requirements for systems and equipment are clearly identified so that the PBR/GP:

- **Clearly delineates all the requirements necessary for a source to comply with applicable**

state and federal air quality

regulations (e.g., New Source Performance Standards [NSPS] that apply to new turbines and engines).

- Limits the equipment so as not to trigger additional requirements (e.g., construction or modification that would trigger major source or major NSR requirements).

Step 2 - Develop permit or rule language and review. After defining the program scope, states develop draft rule/permit language based on the review of regulatory requirements and the modeling results. The PBRs and GPs also include monitoring and inspection requirements sufficient to ensure continuing compliance with emissions limits or other requirements. The monitoring, recordkeeping, and reporting requirements defined in a PBR or GP are set up to ensure that the requirements are adequate to demonstrate compliance with emission standards, work practices, and other permit requirements.

Depending on the permitting authority's policies and air quality status within the state, the PBR or GP might include requirements for initial and ongoing performance testing. Once the agency has drafted the PBR or GP language, the draft rule is reviewed by the state permitting group, state environmental department, and legislative committee, if necessary. Revisions are made based on comments received, and additional technical evaluations may be conducted to respond to reviewers' comments.

Step 3 - Public Comment. Once the rule/permit program is drafted and reviewed, the public is notified and provided an opportunity to comment. States can notify the public in a number of ways (e.g., via the newspaper, letters or emails to interested parties, posting on websites, or other methods). Comments submitted are reviewed and responses documented. In some cases, additional technical evaluations might be required to address comments.

Depending on its objectives, the state could send the proposed rule/permit to EPA for its comment and possibly for approval into the state's State Implementation Plan (SIP). This step could happen at any time during the process, but

generally occurs during or after the public notice period.

Step 4 – Finalize. After all public comments are reviewed, the state makes final revisions, receives final approval, and issues the rule/permit program. The final approval process can vary significantly by state, depending on the state- specific procedures and requirements. For example, in some states, regulations require approval by the legislature or sign-off by the governor or other executive branch representative. Also, if the state plans to include the rule in its SIP, the state would submit the rule to EPA for approval into the SIP. Once approved, the state can take credit for the reductions achieved by the rule in planning for attainment.

PBR and GP: Three State Examples

Connecticut

In 2011, Connecticut Department of Energy and Environmental Protection (DEEP) air quality staff made the decision to develop a PBR for CHP when they noticed an increase in CHP permit applications, and that the CHP permits they were writing were nearly identical and contained the same requirements. To help reduce workload, they decided to develop a PBR that could apply to CHP systems. At the same time, the permit program could prove attractive to CHP developers by providing certainty up-front regarding permit requirements; by eliminating application fees, consulting costs for application processing, and public hearings; and by expediting the permit processing time, which otherwise would take about six months. The PBR, Section 22a-174-3d of Connecticut State Agencies (RCSA)[3], became effective in 2013.[4]

The Connecticut PBR for CHP requires a prospective new source to notify DEEP that they intend to construct and operate pursuant to the PBR. The notification form is available on the Department's Air Emissions Permits website.[5] It contains definitions; applicability information; emission limits; power output limits; and requirements for fuel, stack heights, operating

practices, performance testing, and associated monitoring, recordkeeping, and reporting.

DEEP air quality staff drafted the rule based on the requirements found in the typical site-specific permits they were writing at the time for CHP units. The agency conducted air quality modeling to determine stack heights and setbacks. After internal review and with approval from the Governor's Office and the Office of Policy and Management, DEEP posted the draft rule for public comment, received comments, and made revisions based on the public comments. DEEP held a public hearing, during which EPA provided comments. After revision, the draft rule was sent to the state Attorney General's office for review, and then to a legislative review committee. Revisions were made at each step. The final draft was sent to the Secretary of State for recording before becoming final. It took Connecticut about two years to develop and finalize the PBR.

The PBR is applicable to CHP units that have a potential to emit 15 tons per year or more of any air pollutant. The PBR limits the power output to 10 MW from all units at the site. It also limits emissions to less than 15 tons per year of any pollutant, except hazardous air pollutants, which are limited to less than 3 tons per year. The aggregate 10 MW limit was included to ensure that sources with a PBR would not trigger Connecticut's Environmental Justice public participation requirements in 22a-20a of the Connecticut General Statutes, if the source were to be located in an area covered by environmental justice provisions. More details on the Connecticut PBR are provided in Table 1.

Observations: The rule was established after a financial incentive program ended. Since that time there have been no NSR permit applications for traditionally fired CHP systems, nor have any CHP systems been permitted under the PBR. DEEP staff believe this number will increase as the economy improves or when the state reintroduces financial incentives. The CHP PBR control technology requirements are based on the state's recent NSR Best Available Control Technology (BACT) determinations. DEEP observed that an important consideration for PBRs is the need to periodically assess their adequacy with respect to new requirements, including NAAQS updates, and to incorporate revisions as appropriate.

New Jersey

New Jersey's Energy Master Plan includes a CHP target of 1,500 MW of CHP by 2020. Because of this target, various organizations in New Jersey offered financial incentives for installing CHP. Entities interested in installing CHP and taking advantage of the incentives needed to have the required air permit in hand before the funding organization would provide the incentive. As a result, significant pressure arose to develop an expedited permit solution for CHP. In response, the New Jersey Department of Environmental Protection (DEP) developed two GPs: one for internal combustion engines[6] (General Permit CHP-022) and one for turbines[7] (General Permit CHP-021). Each GP contains four different sets of fuel and emission limits, depending on the size of the equipment and how the source plans to operate the equipment. Both GPs apply to CHP systems that have a maximum heat input of 65 MMBtu/hr or less, with or without duct burners.

To develop the GPs, New Jersey DEP staff gathered data on existing CHP sources and developed a compliance plan applicable to all state and federal regulations. They conducted air quality modeling for worst-case modeling conditions, as well as a risk assessment in accordance with the agency's policies and procedures. The GP language was developed based on the applicable regulations and the modeling and risk assessment results. DEP also made sure that the GP requirements meet New Jersey's "State of the Art" requirements contained in the Air Pollution Control Act of New Jersey, which requires sources to use "advances in the art of air pollution control" for new or modified sources. The draft GPs went through department reviews, revisions, and approvals and were then posted for public comment.

DEP made revisions based on comments received. DEP sent the revised GPs to EPA for a 45-day review, after which the final revisions were approved and made

available for CHP installations. It took 18 months to develop the GPs.

The CHP GP document contains definitions; the statutory authority for the permit; applicability information; fuel heat input limits; emission standards; monitoring, recordkeeping and reporting requirements; exclusions; control equipment specifications; instructions for calculating potential to emit; and a detailed compliance plan. The compliance plan reiterates the emission limitations in the permit and also includes stack testing requirements, stack height requirements, and the NSPS requirements for turbines and engines. The GP documents for CHP are found online in the General Permits section of DEP's Air Quality Permitting Program website.[8] The state has created an online portal to facilitate the permitting process. The final GP for a source includes the company name and a description of the equipment; one of the four sets of limits depending on the sources selection; and the standard language that is included in all CHP GPs. See Table 1 for more details on the requirements of the New Jersey GPs.

Observations: Staff from the New Jersey DEP noted that only two sources have used the GPs and that they had received applications for only two GPs during the time they issued six to eight conventional permits. They offered two reasons why some companies did not select the GPs:

- The GP does not allow alternative fuels, and some recently proposed CHP installations are for units burning digester gas at wastewater treatment plants.
- Some sources wanted the permit to include emissions limits in order to ensure that the addition of a CHP unit would not make them a major source under either Title V or the NSR program. The GP does not allow any customization; therefore, these sources would receive a conventional permit with emissions limits.

DEP staff also noted that environmental justice groups in the state originally did not have any objections to the GPs; however, since they have become effective, some of these groups have

expressed concern about state money used to incentivize distributed power units that release emissions close to communities facing environmental inequities.

DEP staff observed that an unintentional benefit from their work developing the GPs is that multiple staff became very knowledgeable about CHP systems and the regulations that apply to them and can now develop even conventional permits involving CHP systems very quickly. DEP also noted that the GPs serve as a very good starting point for preparing conventional CHP permits.

Texas

In Texas, CHP installations can be permitted under a PBR, a standard permit, or a conventional site-specific permit. A source can decide which option is best for them, considering the applicability and requirements of the PBR and standard permit.

There are two streamlined CHP permit programs in Texas - an Electric Generating Unit (EGU) standard permit program and a PBR. The EGU standard permit became effective in 2001 and was subsequently amended in May 2007. (In Texas, the term "standard permit" is essentially the same as the term "general permit" in other states.) The standard permit is located on the Air Quality Standard Permit for Electric Generating Units website.[9]

The standard permit contains applicability information, definitions, administrative requirements, general requirements, NOx emission limitations, testing requirements, and recordkeeping requirements. A facility can apply for a standard permit for any size CHP system as long as the system meets the emission limits in the permit. A source would register under a standard permit and wait up to 45 days for approval before commencing construction.

The impetus for the PBR for CHP in Texas came from an industry advocacy group, the Texas Combined Heat and Power Initiative (TXCHPI). As a way to help advance CHP in Texas, the TXCHPI wanted to make the permit approval process both quicker and less expensive.

TXCHPI worked with representatives in the Texas legislature to develop and pass legislation requiring the Texas Commission on Environmental Quality (TCEQ) to issue a PBR for CHP. The resulting PBR became effective in 2012.

The Texas PBR under 30 TAC 106.513[10] includes applicability information; definitions; general requirements; emission standards and limitations; control requirements; monitoring and testing requirements; recordkeeping requirements; and maintenance, startup, and shutdown requirements. Texas rules require approval prior to the start of construction and that the CHP system be registered before operation begins. The PBR authorizes construction of a CHP system up to 8 MW in capacity without additional controls, and up to 15 MW with additional controls. The PBR requires testing for NOx and CO twice annually with a portable analyzer. A NOx credit is given for heat recovered from the combustion unit.

To develop the PBR, TCEQ determined all applicable state and federal regulations and developed worst-case parameters for air quality modeling. TCEQ ran modeling scenarios to determine the CHP system size that would not negatively impact the NAAQS. The modeling results were the driver for the applicability and emission limits of the Texas PBR. After drafting the PBR, TCEQ posted the draft rule for public comment. TXCHPI provided comments and worked with TCEQ to revise some of the analyses. TXCHPI also provided TCEQ with additional information on the types of turbines and engines likely to be used in CHP systems, along with extensive engineering data. TCEQ made several revisions to the PBR, and once it was approved by the TCEQ commissioners, it became available for CHP installations. It took one year from passage of the legislation to issuance of the CHP PBR. Table 1 contains more details on the Texas PBR and standard permit.

Observations: TCEQ staff noted that the air quality modeling analysis was critical to determining PBR applicability and requirements while ensuring compliance with the NAAQS. A TXCHPI representative also affirmed the importance of the modeling analysis in setting the emissions limitations in the PBR. The TXCHPI representative acknowledged that typical CHP installations are difficult to define because so many possible configurations exist, but knowing this, it would be important to consider more typical installations in the modeling analyses. TCEQ noted that an effort will be undertaken at some point to update the Texas standard permit (GP) to take into account the revised NAAQS on 1-hour NO_2 and 24-hour fine particulate standards.

Overall Observations

The air regulatory agencies in these states initiated these streamlined procedures for a variety of reasons, ranging from a desire to reduce the burden in permitting smaller CHP installations, to respond to state energy efficiency policy initiatives and state legislative directives, and to encourage CHP installations and recognize the environmental benefits of CHP. In developing the rules, the agencies worked to balance these needs with regulatory development process requirements.

Some common salient features emerged among all the programs:

- The parameters of a CHP PBR/GP program vary by state based on differences in state air permitting programs and air quality considerations.
- State energy incentives played a role in the development of two of the PBRs; however, the extent of industry input in the rule development process remained unclear. Because CHP differs in the type of technology and fuel used at each facility, industry input, either through an industry stakeholder meeting or workshop, could prove to be beneficial to the rule development team.
- The rule development process includes a modeling analysis that takes into consideration the air quality in the state and the attainment and non-attainment status of areas within the state. The modeling parameters play a critical role in defining the

rule parameters, and careful thought needs to

be given to how operational flexibility can be maintained while maintaining air quality standards. In areas of the country that are not part of the Ozone Transport Region (OTR) and have attainment areas, the modeling analysis might not drive the applicability of a PBR or GP as much as it does in states like Connecticut or New Jersey (both in the OTR and with nonattainment areas) and Texas (with nonattainment areas).

- The challenge of PBR/GP programs is to ensure that the requirements are adequate but not so stringent that a facility with a typical CHP configuration finds it easier to apply for a conventional permit.
- A CHP system that will trigger major NSR requirements cannot be permitted using a PBR. Therefore, PBR programs have annual fuel and emission limits as well as potential emissions requirements that reflect this requirement.
- Emission limits that are output-based will allow a CHP unit's efficiency to be considered, including its thermal and electric output. Both New Jersey and Texas account for CHP's electrical and thermal outputs in their PBR/GPs.
- As with other permit programs, PBRs/GPs include performance testing requirements. Most include an initial testing requirement. Programs with additional requirements are noted in Table 1.
- PBR/GP programs include sufficient reporting and recordkeeping requirements to ensure compliance with permit requirements. Common elements in the plans include stack test reports and notification when there is non-compliance.

Though there are clear permit processing and cost benefits to the programs, the number of permits that have been issued under these programs at this time does not track with the total number of CHP systems of a similar size that have been installed in the states. The reasons for this discrepancy are unclear but may reflect a lack of awareness of or perceived benefit to the PBR/GP on the part of applicants—or even the ease in permitting under conventional permit programs for both the facility and the state air quality staff. When considering PBR/GP programs, policy advocates would likely benefit from developing a better understanding of why the opportunities available through the programs have not translated into a greater uptake of permits.

The role that PBRs and GPs can play in encouraging CHP is potentially clearer in states with relatively homogeneous air quality issues than in states with disparate and regional air quality issues. The top three states with CHP systems of less than 10 MW (i.e., the mid-range in system size considered for permitting programs) installed since 2011 are New York, California, and Massachusetts[11]. Connecticut and New Jersey fall fifth and sixth on the list, and Texas is twenty-fifth on the list. The findings raise questions about the factors involved in CHP growth in this size category; for example, does a streamlined permitting program play a significant role, or is it a combination of other state CHP-enabling financial incentives and policies that contribute to the growth? Project economics, such as the spark spread[12], could also play a role in CHP's growth. A combination of incentives has played a role in California, where air quality issues vary across the state and its permit thresholds are very low. Despite stringent requirements and the lack of a streamlined permitting program, California is one of the top three states with installed CHP.

Table 1. Summary of the Rules for Combined Heat and Power General Permits/Permit-By-Rules

Type of Unit	CT CHP PBR Engine or Turbine	NJ CHP General Permit Engine	NJ CHP General Permit Turbine	TX CHP PBR Engine or Turbine	TX CHP Standard Permit Engine or Turbine
Year Became Effective	**2013**	**2011**	**2011**	**2012**	**2001**
Number Issued	0	2		6	100 in the past 10 years
Citation	22a-174-3d	CHP-022	CHP-021	30 TAC §106.513	30 TAC §116.601-615.
Fee	None	$350	$350	$450; $100 for small entities	$900
Applicability					
CHP General Applicability	A system with potential emissions of 15 tpy or more of any regulated air pollutant.	A system using spark ignition engine with or without duct burners, with a total heat input of less than or equal to 65 MMBtu/hr.	A system using turbine with or without duct burners, with a total heat input less than or equal to 65 MMBtu/hr.	A system up to an 8 MW capacity, systems with capacity between 8 and 15 MW to have oxidation catalyst controls.	A system that is an electric generating unit.
Nameplate Capacity Limit	<10 MW aggregate of all EGUs	None	None	≤ 15 MW aggregate of all CHP	None
Heat Input Limit	None	≤ 65 MMBtu/hr heat input for all equipment	≤ 65 MMBtu/hr heat input for all equipment	None	None
System Characteristics					
Overall Efficiency	≥ 55%	≥ 65%	≥ 65%	None; but requires 20% heat recovery	None; but requires 20% heat recovery
Fuels Allowed	Natural gas. Turbines can also use up to 10 % distillate oil.	Natural gas. For a limited time during emergencies, propane can be burned.	Natural gas, propane, kerosene, and distillate oil.	Natural gas. For a limited time during emergencies, other fuels (listed in PBR) can be burned.	Natural, landfill, digester, and stranded oilfield gas; gaseous renewable fuel; and liquid fuels. Fuel specifications are given.
System Requirements					
Stack Height	> 10 meters (or could be higher depending on size of surrounding buildings)	≤ 20 MMBtu: ≥ 35 ft > 20 MMBtu: ≥ 50 ft	≥ 35 ft	None	None
Emission Concentration Limits	Turbine, natural gas: NOx: 2.5 ppmvd CO: 10 ppmvd Ammonia: 5.0	Gaseous fuel: NOx: 0.15 g/BHP/hr CO: 0.50 g/BHP/hr VOC: 0.15 g/BHP/hr	Gaseous fuel: NOx: 15 ppmvd CO: 50 ppmvd VOC: 25 ppmvd	Capacity ≤ 8MW: NOx: 1 lb/MWh CO: 9 lb/MWh Capacity >8 and	NOx is limited in lb/MW-hr. Limit varies based on size, location, installation date,

Table 1. Summary of the Rules for Combined Heat and Power General Permits/Permit-By-Rules

Type of Unit	CT CHP PBR Engine or Turbine	NJ CHP General Permit Engine	NJ CHP General Permit Turbine	TX CHP PBR Engine or Turbine	TX CHP Standard Permit Engine or Turbine
	ppmvd PM_{10}: 2 lb/hr Turbines, distillate NO_X: 9.6 ppmvd CO: 10 ppmvd PM_{10}: 3 lb/hr Engines, Natural Gas: NO_X: 0.08 lb/MMBtu CO: 0.17 lb/MMBtu PM_{10}: 0.02 lb/MMBtu Also comply with NSPS (40 CFR Part 60, Subparts IIII or JJJJ) or NESHAP (40 CFR Part 63, Subparts ZZZZ), as applicable.		Ammonia: 5 ppmvd (if SCR is installed) Liquid Fuel: NO_X: 65 ppmvd NO_X CO: 50 ppmvd CO VOC: 25 ppmvd VOC Ammonia: 5 ppmvd (if SCR is installed) Sulfur in kerosene or distillate oil limited to ≤ 15 ppm	≤ 15MW NO_X: 0.7 lb MWh CO: 9 lb MWh To comply with the NO_X limits, credit can be taken for heat recovery at a rate of 1 MWh for each 3.4 MMBtu recovered.	operation hours, and fuel type. To comply with the NO_X limits, credit can be taken for heat recovery at a rate of 1 MWh for each 3.4 MMBtu recovered. Turbines must meet NSPS requirements under 40 CFR Part 60, Subpart KKKK.
Controls	No controls are explicitly required; however, the emission limits are likely to require SCR and other controls.	None	None	Oxidation catalysts control device achieving at least 70% VOC or 90% organics reduction is required for units that are >8 MW in aggregate.	None
Performance Tests	Initial and every 5 years	Initial and annually	Initial and annual testing or CEMS	Initial testing and semi-annual testing of engines with a portable analyzer. Stack testing required for all engines and turbines over 375 kW every 16,000 hours of operation. Initial stack test may be required for some engines or turbines.	Initial testing required. Retesting every 16,000 hours of operation or every 3 years, depending on which occurs first.

Table 1. Summary of the Rules for Combined Heat and Power General Permits/Permit-By-Rules

Type of Unit	CT CHP PBR Engine or Turbine	NJ CHP General Permit Engine	NJ CHP General Permit Turbine	TX CHP PBR Engine or Turbine	TX CHP Standard Permit Engine or Turbine
Reporting and Recordkeeping Requirements					
Recordkeeping	Performance characteristics on fuel based on type and quantity, hours of operations, system efficiency and air pollution control equipment. Hours of operation for each fuel fired each month. Maintain a monitoring plan and data for from all continuous and parametric monitoring Stack test reports. Inspections and tune-ups. Occurrence and duration of any startup, shutdown or malfunction of the CHP system or control equipment. Plot plan showing CHP system, including stack height and building heights.	Completed GP registration forms. Performance characteristics on fuel based on type and quantity, hours of operations, system efficiency and air pollution control equipment. Annual combustion adjustment records. Startup, shutdown, and malfunction records. Maintenance plan that includes procedures provided by manufacturer. Propane burned during an emergency. Monitor and record as specified in Subpart JJJJ.	Completed GP registration forms. Performance characteristics on fuel based on type and quantity, hours of operations, system efficiency and air pollution control equipment. Annual combustion adjustment records. Startup, shutdown, and malfunction records. Maintenance that includes procedures provided by manufacturer. When visible emissions are observed, daily visible emissions records.	Registration application and associated information. Weekly record when CHP system did not recover 20% of the heat All performance test records. Hours of operation and between each stack test. Records of planned maintenance activities. Number of hours any emergency fuel is used and the reason the fuel was used.	Hours of operation. Maintenance records. Fuel sulfur content. Test reports. Records required by NSPS Subpart KKKK for turbines.
Reporting	Notify within 30 days of commencing construction that CHP system is being constructed and operated under the PBR. Stack test reports within 60 days following stack test date. Violations must	Receive written acknowledgment from NJDEP before construction begins. Submit testing protocol and test report, for stack tests and CEMS performance tests and those specified in Subpart JJJJ. Notify by phone immediately of any	Receive written acknowledgment from NJDEP before construction begins. Submit testing protocol and test report, for stack tests and CEMS performance tests and those specified in Subpart JJJJ. Notify by phone	Register and receive written approval before construction begins. Provide records upon request.	Apply for standard permit and receive approval from TCEQ before beginning construction. Reports required by NSPS Subpart KKKK for turbines. Provide records upon request.

Table 1. Summary of the Rules for Combined Heat and Power General Permits/Permit-By-Rules

Type of Unit	CT CHP PBR Engine or Turbine	NJ CHP General Permit Engine	NJ CHP General Permit Turbine	TX CHP PBR Engine or Turbine	TX CHP Standard Permit Engine or Turbine
	be reported within 15 days. Notify if CHP system is removed or rendered non-operational, within 30 days. Provide records upon request.	non-compliance and within 24 hours for non-compliance with fuel limit. Provide records upon request.	immediately of any non-compliance and within 24 hours for non-compliance with fuel limit. Provide records upon request.		

[1] What constitutes a major source varies according to what type of permit is involved, the pollutant(s) being emitted, and the attainment designation of the area where the source is located. For example, under Title V of the Clean Air Act, any source that emits or has the potential to emit 100 tons per year or more of any criteria air pollutant is a major source.

[2] New Source Review (NSR) requires stationary sources of air pollution to get permits before they start construction. More information can be found at http://www.epa.gov/nsr/info.html.

[3] http://www.ct.gov/deep/lib/deep/air/regulations/mainregs/sec3d.pdf

[4] The Connecticut regulations also include a permit exemption for distributed generators in Section 22a-174-42 that could apply to CHP systems; however, this option is being phased out in favor of Section 22a-174-3d and is therefore not discussed here.

[5] http://www.ct.gov/deep/cwp/view.asp?a=2709&q=324214&deepNav_GID=1643 and http://www.ct.gov/deep/lib/deep/air/compliance_monitoring/chp/combined_heat_and_power_notification_form.pdf

[6] http://www.nj.gov/dep/aqpp/downloads/general/GP-022.pdf

[7] http://www.nj.gov/dep/aqpp/downloads/general/GP-021.pdf

[8] http://www.nj.gov/dep/aqpp/gp.html

[9] http://www.tceq.texas.gov/permitting/air/newsourcereview/combustion/egu_sp.html/#claim

[10] http://www.tceq.state.tx.us/permitting/air/permitbyrule/subchapter-w/gasfired-heatpower.html

[11] ICF CHP Installation Database, 2014.

[12] For a CHP system, spark spread is the difference between the delivered electricity price and the total cost to generate power with CHP. Refer to EPA's Spark Spread Estimator at http://epa.gov/chp/project-development/index.html.