



# Combined Heat & Power – Fuel Cell (CHP-FC) Program

For Fiscal Year 2020

(7/1/2019 through 6/30/2020)

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Limitations

This document is not legally binding on the New Jersey Board of Public Utilities (Board), the Program Administrator, or the Program Manager. If there is any conflict between this document and a Board Order, the applicable Compliance Filing, any legally binding agreement(s), or any other legally binding document(s), such other document(s) shall take precedence and control over this document.

### 1. Purpose

The purpose of this guide is to provide potential applicants and contractors information about the Combined Heat and Power – Fuel Cell program to help guide them on whether to enroll their projects in this program. Information contained here does not supersede the information contained within the Combined Heat and Power – Fuel Cell Application, which is available for download on the Clean Energy Website (see Section 4 below).

### 2. General Program Description

*New Jersey's Clean Energy Program™* (NJCEP) supports the statewide growth of Commercial and Industrial (C&I) Combined Heat & Power and Fuel Cell (CHP-FC) technologies to enhance energy efficiency through on-site power generation and productive use of waste heat.

For the purposes of this program, Combined Heat and Power is defined as follows:

- *Combined Heat and Power (CHP)*

Combined heat and power (CHP), also known as cogeneration, is the sequential production of electricity and useful thermal energy from a single source fuel. Useful thermal energy means energy in the form of direct heat, steam, hot water, or other thermal form that is used for heating, cooling, humidity control, process use, or other valid thermal end-use energy requirements; and for which fuel or electricity would otherwise be consumed. Bio-power and partial bio-power projects that meet these criteria are considered to be CHP projects for program purposes.

Waste heat to power projects that comply with the following definition are treated as CHP projects:

- *Waste Heat to Power (WHP)*

WHP is the process of capturing waste heat discharged as a byproduct of a process and using that heat to generate power. In this configuration, a source fuel is first used to provide thermal energy to meet load requirements of a process or system (i.e. not deliberately creating excess thermal energy for the purpose of electricity generation). The byproduct of this process is heat that would otherwise be wasted to the atmosphere. The waste heat is then repurposed to produce electricity, as opposed to directly consuming additional fuel for this purpose.

Projects meeting the definitions of either CHP or WHP above are collectively referred to as CHP projects in the remainder of this document. For the purposes of this Program, Fuel Cells are not considered to be WHP or CHP.

For the purposes of this Program, Fuel Cell is defined as follows:

- *Fuel Cell (FC)*

Power plants that produce electricity through an electrochemical reaction with a fuel source.

FCs include both FCs that upon installation/construction/commissioning produce useful thermal energy, i.e., FCs with Heat Recovery (FCHR), and FCs that do not produce useful thermal energy upon installation/construction/commissioning, i.e., FCs without Heat Recovery or “all-electric” FCs (FCwoHR).

CHPs and FCs are all eligible for incentives through this Program as set forth in more detail below.

Program participants are eligible to receive financial incentives for CHP-FC installations to further enhance energy efficiency in their buildings through on-site power generation, with or without the productive use of waste heat, and reducing demand from the electric power grid.

By installing CHP-FC systems, participants will assist in reducing overall system peak demand, furthering the use of emerging technologies, reducing emissions, and using distributed generation to provide reliability solutions for New Jersey while supporting the state's Energy Master Plan.

### 3. Target Market

The CHP-FC program is open to all New Jersey-based commercial and industrial (C&I) customers paying into the Societal Benefits Fund. Applications are reviewed and funds committed on a first come, first served basis provided all program requirements are met. CHP-FC systems that receive funding from the Energy Resiliency Bank will not be eligible for incentives through NJCEP.

### 4. Link to Website Information

The following link routes to the overall homepage for the CHP-FC program: [NJCleanEnergy.com/CHP](https://NJCleanEnergy.com/CHP)

### 5. System Eligibility

Natural gas, hydrogen, biogas, and mixed fuel (e.g. natural gas and biogas) CHP-FC equipment installed on the customer side of the utility meter is eligible for incentives. 100% renewable fueled projects, including biogas and landfill gas-fueled projects which meet CHP program criteria, are also eligible to receive incentives. Incentives are listed in Section 6.

To qualify for incentives, CHP-FC projects must meet all of the following eligibility criteria:

- Applicant must be a New Jersey-based commercial and industrial (C&I) customer paying into the Societal Benefits Fund.
- System must be sized to meet all or a portion of the customer's on-site load, not to exceed 100% of most recent historical annual consumption or peak demand. For all CHP-FC projects, any surplus power that may become available during the course of a given year may be sold to PJM. Any CHP-FC system fueled by a Class 1 renewable source is exempted from this program requirement, provided the system is sized to match the Class 1 renewable fuel produced or available on-site.
- Natural gas CHP, Biopower CHP-FC, mixed-fuel CHP-FC (e.g. part biogas, part natural gas), and natural gas or hydrogen Fuel Cell equipment installed on the customer side of the utility meter are eligible. Applicants proposing systems running on fuel other than natural gas should be prepared to provide information in addition to that requested within this application, including but not limited to: availability of biogas, custom calculations showing adjusted energy content of fuel, manufacturer information specific to biogas, support for any added project cost due to biogas consumption, additional grants or incentives that the

- system may be eligible for, and emissions information.
- Equipment must be new, commercially available, and permanently installed. Expansion of an existing system with new equipment is also eligible, however, only the incremental expansion is eligible for incentives.
  - CHP systems must achieve an annual system efficiency of at least 60% (Higher Heating Value – HHV), based on total energy input and total utilized energy output. Mechanical energy may be included in the efficiency evaluation.
    - Waste heat utilization systems or other mechanical recovery systems are required for CHP projects. New electric generation equipment which captures waste heat or energy from existing systems is also allowed.
  - FC systems must achieve an annual electric system efficiency of at least 40% (HHV) based on Net Useful Electric Power plus Net Useful Thermal Production (if any) divided by the Total Fuel Input at HHV.
  - Systems must operate a minimum of 5,000 full-load equivalent hours per year (i.e. run at least 5,000 hours per year at full rated kW output). The Office of Clean Energy (OCE) may grant exceptions to the minimum operating hours requirement for Critical Facilities, provided the proposed system operates a minimum of 3,500 full-load equivalent hours per year and is equipped with blackstart and islanding capability.
    - For this program, a Critical Facility will be classified as:
      - a) A public facility, including any federal, state, county, or municipal facility
      - b) A non-profit and/or private facility, including any hospital, police station, fire station, water/wastewater treatment facility, school, multifamily building, or similar facility that:
        - A. is determined to be either Tier 1 or critical infrastructure by the Office of Emergency Management or the Office of Homeland Security and Preparedness, or
        - B. could serve as a Shelter during a power outage. A Shelter is a facility able to provide food, sleeping arrangements, and other amenities to its residents and the community.
- For the avoidance of doubt, any public facility is a Critical Facility.
- Incentives are paid per project per site. CHP-FC projects will be evaluated on a per site basis and incentives awarded accordingly. Installations of multiple systems planned for the same site within a twelve (12) month period must be combined into a single project.
  - System shall have the ability to automatically disconnect from the utility in the event of substantial grid congestion, interruption, or failure to prevent back feeding to the grid. Note that systems are not required to continue to operate independent from the utility in the event of substantial grid congestion, interruption, or failure.
  - CHP-FC systems must have a ten (10) year all-inclusive warranty. The warranty must cover the major components of the system eligible for the incentive, to protect against breakdown

- or degradation in electrical output of more than ten percent from the originally rated electrical output. The warranty shall cover the full cost of repair or replacement of defective components or systems, including coverage for labor costs to remove and reinstall defective components or systems. In the event the system warranty does not meet program requirement, customer must purchase an extended warranty or a ten (10) year maintenance/service contract. The cost of the ten (10) year warranty or service contract may be considered as part of the cost of the project.
- Notwithstanding the foregoing, public entities that are prohibited from entering into agreements for the full ten (10) years may comply with the 10-year requirement by:
- a) providing an agreement for the longest lawful term;
  - b) committing the entity to purchase an agreement for the remaining years; and
  - c) either:
    - i. providing the vendor's commitment for specific pricing for those remaining years; or
    - ii. assuming the pricing for the remaining years will increase by 2.5% each year (e.g., for the purpose of calculating a payback period).
- Each CHP-FC project must pass a project-level cost-effectiveness analysis demonstrating the simple project payback period, including any federal tax benefits and the NJCEP incentive. CHP-FC systems installed in Critical Facilities must not exceed a payback period of 20 years, CHP systems fueled by a Class 1 renewable source must not exceed a payback period of 25 years, and all other CHP-FC systems must not exceed a payback period of 10 years.
  - Third party ownership (or leased equipment), such as those procured under Power Purchase Agreements, are permitted with the following provisions:
    - a) Projects are subject to ten (10) year warranty requirements as stated above.
    - b) Additionally, in order to ensure the equipment remains on site and is in operation for the term of the agreement, a binding agreement is required between the parties. A copy of this agreement shall be provided to the Program Manager prior to commitment of incentives. The agreement should state that the equipment could be transferred to new owners should the property be sold or otherwise have a buyout provision so the equipment remains on site and stays operational so the projected energy savings can accrue. The intent is to provide incentives for generating equipment, which is installed and functioning for the duration of its useful life. Under the Program, only permanently installed equipment is eligible for incentives and this must be physically demonstrable to the Program Manager, upon inspection, prior to receiving an incentive. This can be demonstrated by electrical, thermal, and fuel connections in accordance with industry practices for permanently installed equipment and be secured to a permanent surface (e.g. foundation). Any indication of portability, including but not limited to temporary structures, quick disconnects, unsecured equipment, wheels, carrying handles, dolly, trailer, or platform will deem the system ineligible.
    - c) The customer/applicant will be allowed to sign over the incentive to the third party owner. A valid project cost shall be demonstrated as part of the application in order to establish an appropriate incentive level.
    - d) All other program rules apply.

- The following criteria may also apply during review of CHP-FC project applications:
  - a) Environmental performance;
  - b) Projected system startup date;
  - c) Annual system utilization;
  - d) Alignment with programmatic goals;
  - e) Project clarity;
  - f) Facility's operation as an Emergency Management Center.

#### Ineligible Types of CHP-FC Systems:

The following types of generating systems/equipment are not eligible for the program:

- Used, refurbished, temporary, pilot, demonstration, or portable equipment/systems;
- Back-Up Generators - systems intended solely for emergency or back-up generation purposes; and
- Any system/equipment that uses diesel fuel, or other types of oil and coal for continuous operation.

#### Manufacturer Diversity

No more than 30% of the New Funding component of any fiscal year's NJCEP budget for Fuel Cells may be used to fund FC projects substantially involving equipment for any single Fuel Cell manufacturer. For the avoidance of doubt, this applies to both subsets of FC projects; Fuel Cells without Heat Recovery (FCwoHR) and Fuel Cells with Heat Recovery (FCHR).

## 6. Financial Incentives

Incentives vary based on CHP-FC technology, type, project size, and total project cost. Details on qualifying technologies and available incentives can be found below.

Projects will receive incentives in three partial payments. The first incentive will be paid upon proof of purchase of equipment. The second payment will be paid upon project installation and operation, including successful inspection. The remainder of the project incentive will be paid upon acceptance and confirmation that the project is achieving the required performance thresholds based on twelve (12) months of continuous operating data submitted within 24 months of installation demonstrating the system meets program requirements.

Regarding the third incentive, if all other required performance thresholds are achieved:

- The kWh produced is  $\geq 80\%$  of that specified in the Program-approved application, the full third incentive is earned.
- But if the kWh produced is  $\geq 50\%$  but  $< 80\%$ , of that specified in the Program-approved application, the amount of the third incentive that is proportional to the achieved efficiency is earned.
- And if the system efficiency is  $< 50\%$  of that specified in the Program-approved application, no third incentive is earned.

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For example, if the third incentive was committed at \$100,000 and the verified kWh generation was 65% of the proposed amount, the final incentive will be \$65,000

The payment structure is summarized below:

Purchase	Installation	Acceptance of 12 months post-installation data
30%	50%	20%

Applicants will not be allowed to receive incentives for the installed generation equipment from other available SBC-funded programs or from the Energy Resilience Bank. CHP-FC projects will be evaluated on a per site basis and incentives awarded accordingly. Installations of multiple systems planned for the same site within a 12-month period must be combined into a single project. For the avoidance of doubt, if at any time prior to system installation and operation a project is cancelled or abandoned, the incentive funds paid to date must be promptly returned to NJCEP.

#### CHP-FC Incentive Structure

Eligible Technology	Size (Installed Rated Capacity)	Incentive (\$/Watt) <sup>(5)</sup>	% of Total Cost Cap per project	\$ Cap per project	
CHP powered by non-renewable or renewable fuel source, or a combination <sup>(4)</sup> : <ul style="list-style-type: none"> <li>• Gas Internal Combustion Engine</li> <li>• Gas Combustion Turbine</li> <li>• Microturbine</li> </ul>	≤500 kW <sup>(1)</sup>	\$2.00	30-40% <sup>(2)</sup>	\$2 million	
	>500 kW – 1 MW <sup>(1)</sup>	\$1.00			
	Fuel Cell with Heat Recovery (FCHR)	>1 MW – 3 MW <sup>(1)</sup>	\$0.55	30%	\$3 million
		>3 MW <sup>(1)</sup>	\$0.35		
Fuel Cell without Heat Recovery (FCwoHR)	Same as above <sup>(1)</sup>	Applicable amount above	30%	\$1 million	
Waste Heat to Power (WHP) <sup>(3)</sup>  Powered by non-renewable fuel source. Heat recovery or other mechanical recovery from existing equipment utilizing new electric generation equipment (e.g. steam turbine)	≤1 MW <sup>(1)</sup>	\$1.00	30%	\$2 million	
	>1 MW <sup>(1)</sup>	\$0.50	30%	\$3 million	



- (1) Incentives are tiered which means the incentive levels vary based upon the installed rated capacity, as listed in the chart above. For example, a 4 MW CHP system would receive \$2.00/watt for the first 500 kW, \$1.00/watt for the second 500 kW, \$0.55/watt for the next 2 MW and \$0.35/watt for the last 1 MW (up to the caps listed).
- (2) The maximum incentive will be limited to 30% of total project. For CHP-FC systems ≤ 1MW, this cap will be increased to 40% where a cooling application is used or included with the CHP system (e.g. absorption chiller).
- (3) Projects installing CHP with WHP will be eligible for incentives shown above, not to exceed the lesser of percent per project cap or dollars per project cap of the CHP. Minimum efficiency will be calculated based on annual total electricity generated, utilized waste heat at the host site (i.e. not lost/rejected), and energy input.
- (4) CHP or FC systems fueled by a Class 1 renewable fuel source are eligible for a 30% incentive bonus. If the fuel is mixed, the bonus will be prorated accordingly. For example if the mix is 60/40 (60% being a Class 1 renewable), the bonus will be 18%. This bonus will be included in the final/performance incentive payment, based on system performance and fuel mix consumption data. Total incentive, inclusive of bonus shall not exceed above stipulated caps.
- (5) All CHP-FC systems located at Critical Facility and incorporating blackstart/islanding technology are eligible for a 25% incentive bonus (additional to the incentives calculated in accordance with the table immediately above, but still subject to the project Cap in that table). For this Program, a Critical Facility is any:
  - a. Public facility, including, without limitation, any federal, state, county, or municipal facility, or
  - b. Non-profit and/or private for-profit facility, including, without limitation, any hospital, water/wastewater treatment facility, school, multifamily building, or similar facility that:
    - i. Is determined to be either Tier 1 or critical infrastructure by the New Jersey State Office of Emergency Management or Office of Homeland Security and Preparedness,
    - ii. Could serve as a Shelter during a power outage. For this Program, a Shelter is a facility able to provide food, sleeping arrangements, and other amenities to its residents and the community.

For the avoidance of doubt, any public facility is a Critical Facility.

## 7. Application Process

All submittals to the program must be signed by a New Jersey licensed Professional Engineer (PE) certifying that the information is accurate to the best of their knowledge. Applications must be submitted via email directly to [CHP@NJCleanEnergy.com](mailto:CHP@NJCleanEnergy.com). Hard copy submissions will not be accepted.

### Pre—Installation

1. Applicant submits an electronic application and required supporting documentation.

2. A completeness review is completed to verify application submission and an engineer is assigned to the project who reviews the application for technical and eligibility requirements.
3. If an application is deemed complete and meets program criteria, a pre-inspection of the site will be scheduled to verify that no existing CHP-FC system is present, as well as to verify any existing heating/cooling equipment to be modified and/or tied into the CHP-FC.
4. Upon successful pre-inspection and technical review a commitment/award letter will be issued approving the project and reserving the incentive. If the project incentive is projected to be more than \$500,000, NJBPU Board approval is also required before a commitment/award letter can be issued.
5. The incentive funding will be reserved for eighteen months from the date of the award letter.

#### First Incentive Payment

In order to collect the first incentive, Applicant (or authorized contractor) must submit the following to the program:

1. Executed customer/developer agreement (if not previously submitted)
2. Proof of equipment purchase (invoice, receipt, etc.) This must be detailed to show what equipment was purchased, including manufacturer, model, quantity, and cost. Equipment *purchase date* does not have to precede application approval date.
3. A valid W9 certificate in the payee's name (<https://www.irs.gov/pub/irs-pdf/fw9.pdf>)
4. Current Tax Clearance Certificate ([www.NJCleanEnergy.com/TCC](http://www.NJCleanEnergy.com/TCC))

The Project Manager reviews all the above, and if satisfactory, issues the payment.

#### Second Incentive Payment

1. Applicant must purchase a qualifying system and have it installed according to Program Requirements within 18 months of the date listed on the Approval Letter. Projects are expected to be designed and proposed as feasible, viable projects that can be permitted in all relevant jurisdictions. The Program, however, recognizes that some project changes may be required in order to be consistent with the results of any environmental assessment, DEP, or other local state or federal permitting requirement, or events that are unforeseen by the proposals. The Project Manager must be notified in advance of any proposed change in a project while the application is pending or active for that project.
2. After the approved system is installed, the Applicant (or authorized contractor) must submit the following to the program in order to receive the second incentive payment and the Project Manager reviews for completeness:
  - a) Updated Application with post-installation/as-built data
  - b) Proof of additional purchases/labor (invoices). *Installation date* should post-date approval letter date.

- c) Proof of executed 10-year warranty or service contract
  - d) Copy of the Electrical Code Inspection Certificate
  - e) Completed Interconnection Application approved by the utility company
  - f) Current Tax Clearance Certificate
3. The Project Manager schedules a Post-inspection to verify system was installed per approved application.
  4. After the installation is completed, submittal documents verified, and necessary inspections are performed and passed, the Project Manager approves payment of second incentive.
  5. If eligible, the 25% blackstart/islanding bonus is paid at this time as well.

### Third Incentive Payment

1. In order to receive the final, third incentive, Applicant (or authorized contractor) must submit the following to the program and the Project Manager will review for completeness of submittal:
  - a. 12 months of operational data demonstrating minimum system efficiency was achieved and net annual generated kWh are within 50% of that stated in the approved Application. This shall be done by implementing appropriate metering as part of the system installation. Data collected should include, but is not limited to: fuel input (MMBtu), electrical output (kWh, MMBtu), recoverable and *utilized* thermal output (MMBtu). The detailed metering plan included with the Application shall be followed. Note that the final incentive amount is dependent on net annual kWh generated. Refer to section 6 of this document for the third incentive payout calculation formulas.
  - b. Current Tax Clearance Certificate
2. Project Manager verifies minimum performance thresholds have been achieved and approves payment of Third Incentive.
3. If eligible, the renewable fuel bonus is paid at this time as well.

## 8. Extensions

Any circumstances leading to the delay past the 18-month installation timeframe must be reported to the program at least one month prior to the expiration of the funding award. Extension requests must be submitted in writing and must present a schedule that identifies how much extra time is needed to complete the project. The Program Manager may grant up to two extensions, each for a period of up to six (6) months, so long as the applicant can demonstrate proof of significant project advancement in the form of copies of permits, equipment invoices, installation invoices indicating percent complete, updated project schedules, etc. In addition, the Program Administrator (PA), with the approval of Board Staff, may approve up to two extensions, each of a length set by the PA with the approval of Board Staff, beyond the extensions the Program Manager is authorized to approve.

## 9. Inspections

Pre and Post inspections are conducted on 100% of projects. Installation cannot begin until an application is approved, which includes a site Pre-inspection. A Pre-inspection alone (before Application approval) is not an approval to begin installation.

The Post-Installation inspection confirms that the project has been installed per the specifications of the approved application as well as in line with all program requirements.

## 10. Program Dispute Resolution

Disputes, concerns, or complaints that arise will be addressed initially by the Program Manager or Program Staff at the point of contact. If resolution for whatever reason is not possible, there is a dispute resolution process backed by the NJ Board of Public Utilities.

For contractual disputes between a system owner and installer or registrant, the NJ Division of Consumer Affairs (DCA) is the point of contact and the agency has an online complaint form.

The program is designed to allow for participation by any third-party contractor that meets the program requirements. There are BPU approved contractor remediation procedures that will be followed if a contractor is found to violate program procedures and rules or consistently violates program requirements which may include being barred from participating in the program.

## 11. Call Center Support

New Jersey's Clean Energy Program operates a call center staffed weekdays between 8 AM and 7 PM. The phone number is 866-657-6278. The call center is trained in answering general questions about the program and application processes as well as able to provide specific information pertaining to an application.

Email inquiries may also be directed to [CHP@NJCleanEnergy.com](mailto:CHP@NJCleanEnergy.com)