

NORTH AMERICAN Precast Concrete Sustainable Plant Program

The North American Precast Concrete Sustainable Plant Program is a joint initiative from the members of the Canadian Precast/ Prestressed Concrete Institute (CPCI), the National Precast Concrete Association (NPCA) and the Precast/Prestressed Concrete Institute (PCI).



**NORTH AMERICAN
PRECAST CONCRETE**
SUSTAINABLE PLANT PROGRAM

The goal of this program is to reduce the environmental impact at the manufacturing level while creating a culture of sustainability within the North American Precast Concrete Industry. The benefits of sustainable business practices are well documented. As the leading technical resources for the precast concrete industry in North America, the Canadian Precast/Prestressed Concrete Institute (CPCI), the National Precast Concrete Association (NPCA) and the Precast/Prestressed Concrete Institute (PCI) are providing a web based Software Tracking Program, developed by Athena Sustainable Materials Institute, for its member plants. This program allows plants to track environmental performance measures, monitor changes and improvements in performance, and enhance their environmental and economic performance.

OVERVIEW:

The North American Precast Concrete Sustainable Plant Program (NAPCSPP) is a program designed to encourage continuous improvement and compliance to environmental and sustainability regulations and standards. Environmental performance is determined based on the intents of all applicable government environmental policies. Sustainability performance builds on the North American Precast Concrete LCA research already completed by the North American Precast Concrete Industry. The program is not intended to replace municipal, provincial/state or federal environmental acts and their requirements; it is a program designed to track the improvements implemented by each manufacturer. It is the responsibility of each individual manufacturer to understand and comply with the applicable government requirements. As part of this program, facilities are required to submit confidential benchmark reports on a quarterly basis. The aggregated results of the program are communicated to the public through the **North American Precast Concrete Industry Sustainability Report**.



The environmental and sustainability requirements are based on the following sub-categories:

A. ENVIRONMENTAL PERFORMANCE STANDARDS

- a. Dust Control
- b. Process Water, Storm Water and Chemical Management
- c. Noise Control

B. SUSTAINABILITY PERFORMANCE STANDARDS

- a. Energy
- b. Materials
- c. Transportation
- d. CO2 equivalent
- e. Total Primary Energy
- f. Water Consumption



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A. REQUIREMENTS FOR ENVIRONMENTAL PERFORMANCE STANDARDS

- a. **Dust Control** – The facility tracks the following measures related to controlling dust including any dust produced by traffic, storage activities or the handling of materials, and meeting the requirements of local ordinances. The program tracks whether:
1. The facility maintains a best management practice plan for the control of fugitive dust emissions.
 2. All bulk cementitious materials are stored in silos equipped with bag houses/dust collectors.
 3. Facility ensures that silo emissions are in compliance with their best management practices.
 4. All silo emissions meet relevant government requirements.
 5. All cementitious material bag houses are inspected a minimum of once per month.
 6. All outside aggregate storage is in three-walled enclosures.
 7. Aggregate is washed prior to receiving at plant.
 8. All exterior aggregate conveyor systems are equipped with protective wind enclosures.
 9. All weigh hoppers are located inside an enclosed building.
 10. All unpaved traffic areas on plant facility (including storage area traffic locations) use approved dust suppression techniques or environmentally friendly chemicals.
 11. Paved traffic areas (including storage area traffic locations) have a regular sweeping program in place.
 12. All sand blasting (or similar post-manufacture applied finish that creates dust) is done in an environment (indoors or outdoors) that controls and collects fugitive dust.
 13. Crushing of waste concrete is conducted in such a manner not to affect the environment as defined in their facility best management practices.
- b. **Process Water, Storm Water and Chemical Management Requirements** - Participating plants must be located on sites that do not discharge untreated process / waste water to the natural environment, and meet the requirements of local ordinances. The program tracks whether:
1. The facility maintains a best management practice plan for the control of process water, waste water, and chemical management.

2. Process / waste water is:
 - directed to the storm sewer,
 - recycled in the process,
 - collected for transfer to an approved off-site facility, or
 - Discharged to the ground. In this case, the plant ensures that the runoff has acceptable levels of pH, acceptable levels of suspended solids, and acceptable hydrocarbon concentration.

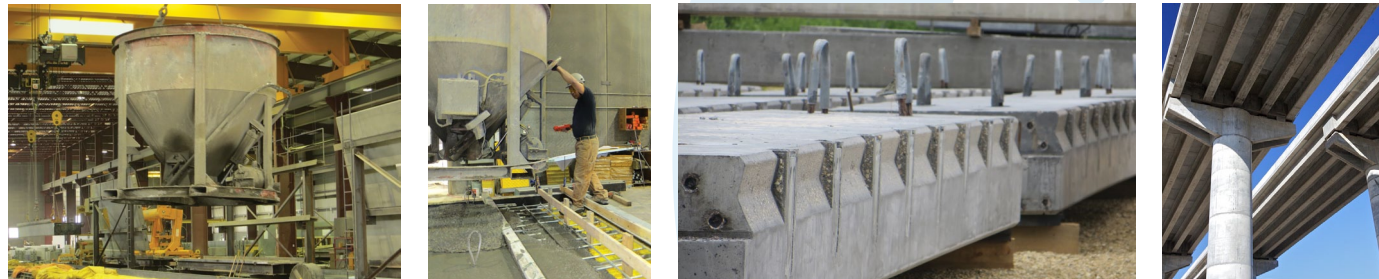


3. Process water discharged to the ground is sampled and analysed a minimum of once/month.
4. Storm water run-off from the yard and traffic areas is; captured and recycled on site OR captured and discharged to the municipal storm sewer OR captured and transported off-site for disposal OR if discharged to a creek, has been reviewed and is in compliance with local authority approved drainage plans.
5. All effluent from acid etching or retarding chemical washing procedures are captured on site and disposed of according to applicable requirements.
6. All sealants, acids, chemical retarding agents or form release agents meet acceptable VOC requirements.
7. All chemicals stored in clearly marked containers with safety markings, and enclosed in spill containment areas where required by WHMIS or OSHA.
8. All fuel is stored on-site in approved containers and enclosures as required by applicable regulations.

c. **Noise Control Requirements** - The facility makes efforts to control noise to surrounding sensitive receptors (examples; residences, hotel/motels, nursing homes, hospitals, etc.), and meets the requirements of local ordinances. The program tracks whether:

1. The facility maintains a best management practice plan for the control of noise.
2. The facility has a noise reduction plan such as:
 - performing lower dBA activities,
 - using acoustic enclosures, or
 - enclosing noise sensitive operations when manufacturing during non standard hours according to local ordinances or when operating within “reasonably close” distance to sensitive receptors.
3. The facility controls nuisance vibrations to surrounding sensitive receptors.

General - The facility documents in writing all environmental incidents that contravene applicable environmental regulations or North American Precast Concrete Sustainable Plant Program requirements. Such documentation includes resolution of complaints. The plant notifies regulatory authorities as required by legislation.



2. The facility tracks and measures all waste streams and implements a plan to reduce non-recyclable waste.
3. The facility recycles production waste and measures recycling activities.
4. The facility recycles waste from office and administrative activities.
5. The facility reports waste reduction from operations, which is then aggregated for industry averaging. The facility benchmarks against the industry and its plan.

c. **Transportation**

1. The facility maintains a best management practice plan for transportation.
2. The facility engages transportation companies that have a commitment to benchmarking and measuring their energy consumption, and have a plan for year over year reduction.
3. The facility tracks fuel consumption for all yard and production vehicles, all company vehicles, and all delivery equipment.
4. The facility reports (in confidence) fuel consumption from operations semi-annually, which is then aggregated for industry averaging.

The goal of the North American Precast Concrete Sustainable Plant Program is to benchmark the precast industry’s impact on the environment in the areas of global warming potential, energy use, water use, and waste, dust, and noise generation. Ultimately, the precast industry is striving to reduce the environmental impact at the manufacturing level while creating a culture of sustainability within the industry.

The benefits of sustainable business practices are well documented. The customised industry software, *Precast Plant Sustainability Tracking Program (Version 2.1)* – developed by the Athena Sustainable Materials Institute (ASMI), enables individual manufacturers to measure their “cradle to gate” environmental footprint (with cradle being raw material resource extraction and gate being the finished product leaving the precast plant for the construction site).

Once a manufacturing facility enters their raw material usage, electricity, natural gas, gas, diesel, heavy fuel oil and liquefied propane gas usage the software uses the ASMI database to calculate the environmental indicators – global warming potential (GWP), total primary energy (TPE) and water usage for the plant. The facility also self-evaluates and reports their environmental performance indicators – dust, noise and waste materials.

Participating plants report their tracked results on a quarterly basis, the results of which are presented in this report along with the year to date results. Individual plants are also provided a customised report on a quarterly basis for their own internal benchmarking. Specifiers and owners can request the sustainability impacts on a project-to-project basis and are also encouraged to include this requirement in their contract specifications.

The Canadian industry has now been reporting for two years, and provides a summary report at www.sustainableprecast.ca. The United States will begin reporting in 2015 and a North American report will follow.

B. REQUIREMENTS FOR SUSTAINABILITY PERFORMANCE STANDARDS

a. **Energy**

1. The facility maintains a best management practice plan for energy consumption.
2. All energy consumption tied to the manufacturing process is measured and benchmarked; Energy consumption includes electricity, natural gas, and various fossil fuels.
3. All energy consumption tied to office and administration is measured and benchmarked.
4. The facility implements a reduction plan for plant and office energy consumption.
5. The facility reports energy consumption quarterly , which is then aggregated for industry averaging. The facility benchmarks against the industry and its plan.

b. **Materials**

1. The facility maintains a best management practice plan for material usage and disposal.



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