**U.S. Environmental Protection Agency
2010-2014 Pollution Prevention (P2) Program
Strategic Plan**

February 2010

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Executive Summary

The broad mission of EPA's Pollution Prevention (P2) Program is to prevent pollution at the source, promote the use of greener substances, and conserve natural resources, which are critical steps towards achieving a sustainable society. P2 is a cornerstone of the sustainability movement, which strives to ensure that our children and grandchildren inherit a world that is as good as today, or preferably better. This Strategic Plan will guide the EPA P2 Program as it works to achieve its mission over the next five years and contribute to the development of a sustainable world.

This Plan centers on the work and achievements of the Agency's P2 Program, which is comprised of the Office of Pollution Prevention and Toxics (OPPT) Pollution Prevention Division (PPD) and the P2 programs of the OPPT Economics, Exposure, and Technology Division (EETD) and the Regions. Per its statutory obligation, the P2 Program will also continue to promote complementary activities taking place across EPA that collectively constitute the Agency's overall P2 agenda.

The P2 Program's strategy over the next five years is to identify and leverage pollution prevention opportunities to help reduce: the emission of greenhouse gasses; the use of hazardous[1] materials; and the use of natural resources, while contributing to a greener and more sustainable economy. In addition, the Plan includes an appendix that describes the P2 Program's five-year strategy for each of five sector areas: **Chemicals & Manufacturing Industries, Hospitality, Electronics, Building & Construction, and Municipalities & Institutions**. The strategies for these sectors are draft documents that were developed by P2 Program staff as initial thought pieces on activities to explore further.

The P2 Program intends to maximize the achievement of results across five goals to deliver co-benefit reductions in emissions of greenhouse gases and use of hazardous materials and natural resources. The draft strategic targets listed under Goals 1-4 have been developed specifically for the P2 Program in the context of the Agency's strategic planning process and are considered achievable based on the program's past results. These targets are highly ambitious, incorporating feedback from EPA's Science Advisory Board to build a recurring results framework into the program's performance measures.

Goal 1: <u>**Reduce the generation of greenhouse gas (GHG) emissions to mitigate climate change**</u>

Strategies:
- <u>Reduce energy use thru redesign.</u> Encourage and provide support for the design of products, processes, and systems that minimize the use of energy throughout the life cycle, including the redesign of alternative chemistries and chemical manufacturing processes.
- <u>Facilitate energy efficiency.</u>
  - Provide technical expertise and support P2 assistance providers in their efforts to increase energy efficient and climate friendly practices by businesses, governments, and consumers.
  - Promote environmentally preferable procurement.

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[1] Hazardous is used in a broad sense to include federally or state regulated pollutants, including Clean Air Act criteria pollutants and Clean Water Act water quality criteria pollutants and conventional pollutants, but excludes items generally considered of low hazard and frequency recyclable or divertible, such as paper products, cans, iron and steel scrap, and construction waste.

- Promote alternative technologies. Promote technologies and practices that prevent the production of greenhouse gasses.
- Target new sources of GHG emissions for elimination. Avoid or eliminate new sources of GHG emissions.

Measure: Million metric tons of carbon dioxide equivalent (MMTCO2e) reduced
Draft Strategic Target: By 2014, reduce, conserve, or offset 115 MMTCO2e cumulatively compared to the 2006 baseline amount of 1.2 MMTCO2e reduced, conserved, or offset.

Goal 2: **Reduce the manufacture and use of hazardous materials to improve human and ecological health**

Strategies:
- Encourage life cycle reduction of hazardous materials thru redesign. Encourage and provide support for the design of products and systems that minimize the use of hazardous materials throughout the life cycle.
- Facilitate information sharing. Facilitate information sharing on hazardous materials of concern and provide technical expertise and support for green chemistry, green engineering, and design for environment alternative assessment and recognition efforts.
- Offer guidance on the reduction of hazardous materials. Support P2 assistance providers in giving guidance to businesses, governments, and consumers on the reduction of hazardous materials and informed chemicals substitution.

Measure: Pounds of hazardous materials reduced
Draft Strategic Target: By 2014, reduce 20 billion pounds of hazardous materials cumulatively compared to the 2006 baseline of 0.46 billion pounds.

Goal 3: **Reduce the use of water and conserve other natural resources to protect ecosystems**

Strategies:
- Encourage life cycle reductions of natural resource use thru redesign. Encourage and provide support for the design of products and systems that minimize the use of water and other natural resources throughout the life cycle.
- Facilitate conservation practices. Provide technical expertise and support P2 assistance providers through water conservation and ecosystem protection guidance for businesses, governments, and consumers.

Measure: Gallons of water reduced
Draft Strategic Target: By 2014, reduce water use by 190 billion gallons cumulatively compared to the 2006 baseline amount of 2.3 billion gallons reduced.

Goal 4: **Create business efficiencies that derive economic benefits and improve environmental performance**

Strategies:
- Demonstrate P2 effectiveness. Support P2 assistance providers in demonstrating to businesses, governments, and consumers how pollution prevention saves money, protects workers' health, promotes green jobs, and conserves and protects natural resources.

- Promote sustainable business models. Promote new business models rooted in sustainability planning that incorporate environmentally preferable purchasing, design for the environment, green chemistry, green engineering, green building, and other P2 approaches.
- Promote business incentives. Communicate P2 benefits for businesses to promote widespread adoption of P2 technologies and solutions to effect lasting behavioral change. P2 benefits include opportunities for increased revenues and significant cost savings through the implementation of P2 practices.
- Promote technology transfer. Effectively promote technology transfer mechanisms, such as the Green Chemistry Expert System, to provide information about safer technology options.
- Promote cross-Agency collaboration. Support and promote cross-Agency collaboration with business assistance programs at Federal and State levels (e.g., the Department of Commerce's Manufacturing Extension Partnership (MEP), the Small Business Administration's Small Business Development Centers (SBDC), EPA's Small Business Assistance Program (SBAP), the EPA Environmental Assistance Network, and the Interagency Network of Enterprise Assistance Providers (INEAP)).

Measure: Dollars saved
Draft Strategic Target: By 2014, save $14 billion through pollution prevention improvements in business, institutional, and government costs cumulatively compared to the 2006 baseline of $2.1 billion dollars saved.

Goal 5:   **Institutionalize and integrate pollution prevention practices through government services, policies, and initiatives**

Strategies:
- Advance sustainability initiatives. Identify opportunities to promote sustainability Agency-wide, and emphasize pollution prevention within the Agency-wide context.
- Utilize P2 to help address climate change. Help the Agency identify the most sustainable approaches for mitigating and adapting to climate change through emphasizing the life cycle and risk reduction aspects of P2.
- Promote voluntary consensus standards. Promote the development and implementation of voluntary consensus standards to advance pollution prevention practices (e.g., EPEAT, national green meeting standard, etc.)
- Leverage resources to support P2 programs. Identify opportunities to leverage resources to support state, tribal, and local P2 programs.
- Offer tools to support continuous improvement within P2 programs. Develop and provide tools and training to local, state, and federal P2 programs.

Measures: Adoption of P2 approaches

U.S. EPA 2010-2014 P2 Program Strategic Plan

Context

People are looking for change in how we deal with the environment -- looking for solutions that can turn the corner to a new, "green" economy. Pollution prevention (P2), the reduction or elimination of waste at the source, is a natural underpinning for the green economy. P2 has long provided successful, cost-effective solutions that respond to the challenges of protecting human health and the environment. EPA's Pollution Prevention (P2) Program has been integral to the implementation of these solutions nationwide.

The broad mission of EPA's P2 Program is to prevent pollution at the source, promote the use of greener substances, and conserve natural resources, which are critical steps towards achieving a sustainable society. P2 is a cornerstone of the sustainability movement, which strives to ensure that our children and grandchildren inherit a world that is as good as today, or preferably better. This Strategic Plan will guide the EPA P2 Program as it works to achieve its mission over the next five years and contribute to the development of a sustainable world.

EPA P2 Program Background

This Plan centers on the work and achievements of the Agency's Pollution Prevention (P2) Program, which is comprised of the Office of Pollution Prevention and Toxics (OPPT) Pollution Prevention Division (PPD) and the P2 programs of the OPPT Economics, Exposure, and Technology Division (EETD) and the Regions. Per its statutory obligation, the P2 Program will continue to promote complementary activities taking place across EPA that collectively constitute the Agency's overall P2 agenda.

The P2 Program's work is authorized and funded by statute; multimedia by definition; well-leveraged by state and local partners and networks; and capitalizes on established trust relationships with U.S. businesses that appreciate that environmental protection and prosperity are not conflicting goals. The program's authority comes primarily from the 1990 Pollution Prevention Act (PPA). The PPA tasks EPA to implement numerous activities:

- Facilitate P2 adoption through technical assistance
- Develop state and tribal capacity
- Recognize excellence in P2
- Use federal procurement to encourage source reduction
- Establish standard methods of measuring results

Many components of the P2 Program use dual authority from the PPA and the 1976 Toxic Substances Control Act (TSCA). In addition, a series of Executive Orders, since 1993, focus on the identification and acquisition of environmentally preferable products and services for federal agencies.

The EPA P2 Program has a number of strengths which were taken into consideration as this Strategic Plan was being developed:

- Proven capabilities in consensus building and partnership, awards and recognition, and voluntary consensus standards;
- Close affiliation with regulatory chemicals programs and associated scientific/technical expertise;

- Delivery mechanisms for technical assistance and technology transfer at the local level;
- Participation in a strong P2 network including federal, state, and local agencies, NGOs, universities, and professional organizations;
- Success in risk reduction through source reduction and risk management.

The P2 Program applies these strengths to provide multimedia, market-based solutions for businesses, the public sector, and others. The program will continue to build on past successes to incubate new approaches and initiatives, meet targeted needs for sustainable options, and spur innovation.

Description of the P2 Program's Strategy
The P2 Program's strategy over the next five years is to identify and leverage pollution prevention opportunities to help reduce: the emission of greenhouse gasses; the use of hazardous[2] materials; and the use of natural resources, while contributing to a greener and more sustainable economy. Much of the P2 Program's current work will continue, some new projects will be initiated, and some work will cease based on shifts in Agency and program priorities. This Strategic Plan is a living document that will be revised periodically.

The P2 Program is currently part of Goal 5 of the EPA Strategic Plan. Goal 5 relates to compliance and environmental stewardship. Although this P2 Program Strategy is a separate activity from the development of the *2010-2015 EPA Strategic Plan*, linkages are being made between the two documents as appropriate. Also, it is important to recognize that efforts are ongoing throughout the agency to address some of the same issues included in the goals of the P2 Program Strategic Plan. The P2 Program places a high priority on coordinating with other EPA programs to reach common goals.

The five goals of the P2 Program's Strategic Plan are:

1. Reduce the generation of greenhouse gas (GHG) emissions to mitigate climate change
2. Reduce the manufacture and use of hazardous materials to improve human and ecological health
3. Reduce the use of water and conserve other natural resources to protect ecosystems
4. Create business efficiencies that derive economic benefits and improve environmental performance
5. Institutionalize and integrate pollution prevention practices through government services, policies, and initiatives

In addition, the Plan includes an appendix that describes the P2 Program's five-year strategy for each of five sector areas: **Chemicals & Manufacturing Industries, Hospitality, Electronics, Building & Construction, and Municipalities & Institutions**. EPA Headquarters and Regional P2 programs chose these five sectors based on their relative environmental impact and a perceived opportunity for gaining significant environmental results through source reduction/pollution prevention.

Focusing on the five sectors will serve to accelerate the P2 community's ability to promote sustainability solutions including GHG prevention, hazardous materials minimization, and

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natural resource conservation.   The strategies for these sectors are draft documents that were developed by P2 Program staff as initial thought pieces on activities to explore further.

The P2 Program issues grants annually to assist businesses in identifying better environmental strategies and solutions for reducing or eliminating waste at the source. The P2 Grant program promotes measurement of progress in achieving the first four goals of the Strategic Plan within the context of the sector focus areas.

P2 and Sustainability
There are many interpretations of the concept of sustainability. EPA's sustainability web site currently cites the "Brundtland definition" of the 1987 Report of the World Commission on Environment and Development – that sustainability means "meeting the needs of the present without compromising the ability of future generations to meet their own needs." This definition describes sustainability as having three pillars: economic, social, and environmental.

Society   Economy

SUSTAINABILITY
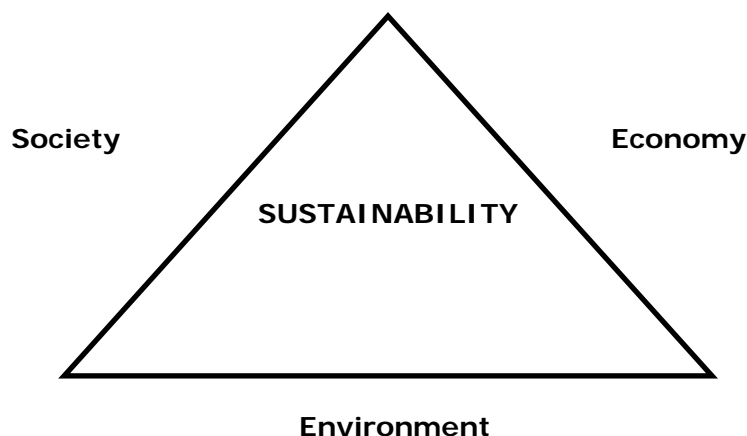
Environment

Contributions of EPA P2 Program & Partners:
- Technical assistance to reduce use of energy, hazardous materials, water, and other natural resources
- Life cycle design and environmentally preferable purchasing
- Development of voluntary consensus standards and recognition programs
- Adoption of lean/P2 practices
- And other activities...

Sustainability and climate change are creating new priorities and new incentives for collaboration across the Agency. Examples of these new priorities are materials management, carbon management (increasingly based on life cycle analysis), product management (based on life cycle and supply chain analysis), climate change adaptation, predicting the impact of carbon pricing, and avoiding further unintended environmental and health consequences. Pollution prevention has a central role to play in all of these areas. EPA's P2 Program contributes to sustainability in many ways, as depicted in the diagram

above. The P2 Program looks forward to working with others to develop a sustainability strategy for EPA that addresses the environmental outcomes emphasized in this Plan. The program will partner with other government agencies at the federal, state, and local levels; existing P2 networks and interstate organizations, including Pollution Prevention Resource Exchange (P2Rx) Regional Centers, the National Pollution Prevention Roundtable, and others; industry; non-governmental organizations; academia; and P2 professional organizations to leverage the needed expertise and resources to increase the adoption of sustainable practices.

P2 Program Five-Year Strategic Plan
The P2 Program intends to maximize the achievement of results across all goals to deliver co-benefit reductions in emissions of greenhouse gases and use of hazardous materials and natural resources. The draft strategic targets listed under Goals 1-4 have been developed specifically for the P2 Program in the context of the Agency's strategic planning process and are considered achievable based on the program's past results. These targets are highly ambitious, incorporating feedback from EPA's Science Advisory Board to build a recurring results framework into the program's performance measures.

Goal 1:   Reduce the generation of greenhouse gas (GHG) emissions to mitigate climate change

Strategies:
- Reduce energy use thru redesign. Encourage and provide support for the design of products, processes, and systems that minimize the use of energy throughout the life cycle, including the redesign of alternative chemistries and chemical manufacturing processes.
- Facilitate energy efficiency.
  o Provide technical expertise and support P2 assistance providers in their efforts to increase energy efficient and climate friendly practices by businesses, governments, and consumers.
  o Promote environmentally preferable procurement.
- Promote alternative technologies. Promote technologies and practices that prevent the production of greenhouse gasses.
- Target new sources of GHG emissions for elimination. Avoid or eliminate new sources of GHG emissions.

Illustrative activities:
- Increase collaboration with the Department of Energy's Industrial Technologies Program to weave energy efficiency technical assistance into the Green Suppliers Network model and implement on a national scale.
- Support the development of standards for additional categories of electronic products under the Electronic Product Environmental Assessment Tool (EPEAT) and promote the purchase and use of EPEAT registered products.
- Assist state and local governments in implementing successful programs to reduce energy consumption in buildings and manufacturing.
- Examples of relevant P2 grant activities:
  o Help integrate greenhouse gas reduction assistance into pollution prevention technical assistance state programs and create new partnerships with energy service providers to reduce energy use.
  o Purchase and use thermographic cameras to conduct plant assessments to track energy use.

- Provide technical assistance to employees of government and non-government organizations to increase green purchasing statewide and realize benefits of increased energy conservation, reduced hazardous waste, and waste minimization.

Measure: Million metric tons of carbon dioxide equivalent (MMTCO2e) reduced
Draft Strategic Target: By 2014, reduce, conserve, or offset 115 MMTCO2e cumulatively compared to the 2006 baseline amount of 1.2 MMTCO2e reduced, conserved, or offset.

Goal 2:   Reduce the manufacture and use of hazardous materials[3] to improve human and ecological health

Strategies:
- Encourage life cycle reduction of hazardous materials thru redesign. Encourage and provide support for the design of products and systems that minimize the use of hazardous materials throughout the life cycle.
- Facilitate information sharing. Facilitate information sharing on hazardous materials of concern and provide technical expertise and support for green chemistry, green engineering, and design for environment alternative assessment and recognition efforts.
- Offer guidance on the reduction of hazardous materials. Support P2 assistance providers in giving guidance to businesses, governments, and consumers on the reduction of hazardous materials and informed chemicals substitution.

Illustrative activities:
- Help large manufacturers identify hazardous materials of concern utilized within their supply chains and help develop P2 strategies for eliminating or reducing those materials, including product redesign.
- Develop information, especially on safer chemical substitutes for building materials and help make that information available in a user-friendly format.
- Commence Life Cycle Assessments on nanoscale materials in lithium ion batteries, in collaboration with EPA's Office of Research and Development.
- Examples of relevant P2 grant activities:
  - Install wet cleaning machines at pilot dry cleaners in order to demonstrate their efficacy and encourage state-wide adoption.
  - Develop and implement a state green chemistry support program through capacity building, education, financial support and networking to institutionalize green chemistry and green engineering practices.
  - Develop a Tribal Pollution Prevention Program to identify and implement pollution prevention and source reduction strategies within the Tribe's commercial activities, health clinic, and administrative offices to decrease the amount of hazardous materials entering waste streams and the environment.

Measure: Pounds of hazardous materials reduced
Draft Strategic Target: By 2014, reduce 20 billion pounds of hazardous materials cumulatively compared to the 2006 baseline of 0.46 billion pounds.

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[3] Hazardous is used in a broad sense to include federally or state regulated pollutants, including Clean Air Act criteria pollutants and Clean Water Act water quality criteria pollutants and conventional pollutants, but excludes items generally considered of low hazard and frequency recyclable or divertible, such as paper products, cans, iron and steel scrap, and construction waste.

Goal 3: <u>Reduce the use of water and conserve other natural resources to protect ecosystems</u>

Strategies:
- <u>Encourage life cycle reductions of natural resource use thru redesign</u>. Encourage and provide support for the design of products and systems that minimize the use of water and other natural resources throughout the life cycle.
- <u>Facilitate conservation practices.</u> Provide technical expertise and support P2 assistance providers through water conservation and ecosystem protection guidance for businesses, governments, and consumers.

Illustrative activities:
- Support local green business recognition programs that include specific goals for reductions in water use.
- Facilitate the implementation of programs that combine lean manufacturing and P2 approaches to conserve water, energy, raw materials, and other natural resources.
- Examples of relevant P2 grant activities:
   o Initiate and lead a project with overall objectives to achieve water and/or energy conservation in municipal, commercial, and/or residential settings.
   o Provide technical assistance/training to commercial home builders to help them build more energy and water efficient homes, while generating less hazardous waste and debris.

Measure: Gallons of water reduced
Draft Strategic Target: By 2014, reduce water use by 190 billion gallons cumulatively compared to the 2006 baseline amount of 2.3 billion gallons reduced.

Goal 4: <u>Create business efficiencies that derive economic benefits and improve environmental performance</u>

Strategies:
- <u>Demonstrate P2 effectiveness.</u> Support P2 assistance providers in demonstrating to businesses, governments, and consumers how pollution prevention saves money, protects workers' health, promotes green jobs, and conserves and protects natural resources.
- <u>Promote sustainable business models.</u> Promote new business models rooted in sustainability planning that incorporate environmentally preferable purchasing, design for the environment, green chemistry, green engineering, green building, and other P2 approaches.
- <u>Promote business incentives.</u> Communicate P2 benefits for businesses to promote widespread adoption of P2 technologies and solutions to effect lasting behavioral change. P2 benefits include opportunities for increased revenues and significant cost savings through the implementation of P2 practices.
- <u>Promote technology transfer.</u> Effectively promote technology transfer mechanisms, such as the Green Chemistry Expert System, to provide information about safer technology options.
- <u>Promote cross-Agency collaboration.</u> Support and promote cross-Agency collaboration with business assistance programs at Federal and State levels (e.g., the Department of Commerce's Manufacturing Extension Partnership (MEP), the Small Business Administration's Small Business Development Centers (SBDC), EPA's Small Business Assistance Program (SBAP), the EPA Environmental Assistance Network, and the Interagency Network of Enterprise Assistance Providers (INEAP)).

Illustrative activities:
- Engage large manufacturers and their suppliers, state P2 technical assistance providers, and National Institute of Standards and Technology (NIST) Manufacturing Extension Partnership (MEP) centers, through EPA's Green Suppliers Network program, to facilitate the adoption by small and medium-size manufacturers of pollution prevention and lean manufacturing best practices.
- Explore opportunities to utilize life cycle assessments in supply chain work.
- Organize outreach/training/workshops for local hospitality providers (with the assistance of local governments, associations, and others) on sustainable practices and resources/assistance provided by relevant EPA non-regulatory programs.
- Encourage and assist with the development and implementation of environmental management systems by businesses and other organizations.
- Examples of relevant P2 grant activities:
  - Create a state P2 program for small businesses in low-income areas.
  - Provide assistance to state businesses and support a P2 internship program.
  - Conduct on-site technical assistance, training and community-based P2 surveys throughout a state, including traditionally underserved areas and tribes.

Measure: Dollars saved
Draft Strategic Target: By 2014, save $14 billion through pollution prevention improvements in business, institutional, and government costs cumulatively compared to the 2006 baseline of $2.1 billion dollars saved.

Goal 5: **Institutionalize and integrate pollution prevention practices through government services, policies, and initiatives**

Strategies:
- Advance sustainability initiatives. Identify opportunities to promote sustainability Agency-wide, and emphasize pollution prevention within the Agency-wide context.
- Utilize P2 to help address climate change. Help the Agency identify the most sustainable approaches for mitigating and adapting to climate change through emphasizing the life cycle and risk reduction aspects of P2.
- Promote voluntary consensus standards. Promote the development and implementation of voluntary consensus standards to advance pollution prevention practices (e.g., EPEAT, national green meeting standard, etc.)
- Leverage resources to support P2 programs. Identify opportunities to leverage resources to support state, tribal, and local P2 programs.
- Offer tools to support continuous improvement within P2 programs. Develop and provide tools and training to local, state, and federal P2 programs.

Illustrative activities:
- Work with others at EPA to develop a sustainability strategy for the Agency.
- Create demonstration pilots (in collaboration with other program offices) to manage materials from a life cycle perspective, thus preventing pollution and enhancing sustainability.
- Combine the analytic tools of OPPT, the Office of Resource Conservation and Recovery (ORCR), and Office of Policy, Economics and Innovation (OPEI) to identify key sectors to target for GHG emission reductions through pollution prevention approaches.
- Work with EPA regulatory programs to pursue opportunities to integrate P2 manufacturing and related best practices in "media" regulations (e.g., January 2008 National Emission Standards for Hazardous Air Pollutants (NESHAPS) regulation adopted Design for the Environment (DfE) auto refinishing best practices).

- Coordinate efforts with EPA's Green Building Workgroup and others; interact with standard development bodies to identify needed information for specific building & product standards.
- Engage the OPEI Partnership Coordination Team and relevant EPA non-regulatory programs to develop an EPA Green Hospitality website to highlight available hospitality-related information and resources, including the availability of voluntary consensus standards for green hospitality practices. Also, work with P2Rx to add relevant information to the P2 Topic Hub for Hospitality.
- Develop a framework for "greener" product performance goals for the use of chemicals in products.
- Develop performance measurement calculators, including calculators to measure the economic benefits of P2.
- Develop/promote assessment tools (e.g., EPEAT) for products and processes.
- Support information exchange and improved communication (e.g., wikis, webinars) about P2 programs and activities, targeted to various audiences
- Highlight the existence of a variety of partnership programs (at www.epa.gov/partners) that can be used to achieve environmental results and cost savings
- Examples of relevant P2 grant activities:
  - Distribute information and tools to aid the practice of P2 to the user community: technical assistance providers, businesses and various state and tribal government agencies.
  - Support a "greening" state government initiative through environmentally preferable procurement and energy efficiency projects.
  - Organize a conference on P2 for wastewater and initiate a state Environmental Excellence program to support wastewater self-assessments, technical assistance site visits, and best practices for stormwater management.

Measures: Adoption of P2 approaches

Appendix 1: List of Acronyms

BMP	Best management practice
CARE	Community Action for a Renewed Environment
DfE	Design for the Environment
DOE	Department of Energy
EETD	EPA OPPT Economics, Exposure, and Technology Division
EJ	Environmental justice
EMS	Environmental management system
EPA	U.S. Environmental Protection Agency
EPEAT	Electronic Product Environmental Assessment Tool
EPP	Environmentally Preferable Purchasing
FAR	Federal Acquisition Regulation
FDA	Food and Drug Administration
FEC	Federal Electronics Challenge
FTR	Federal Travel Regulation
GAO	Government Accountability Office
GHG	Greenhouse gas
GPRA	Government Performance and Results Act
GSA	General Services Administration
GSN	Green Suppliers Network
ICLEI	International Council for Local Environmental Initiatives
LCA	Life cycle assessment
MEP	Manufacturing Extension Partnership
MMTCO2e	Million metric tons of carbon dioxide equivalent
NACo	National Association of Counties
NAHB	National Association of Home Builders
NERL	ORD National Exposure Research Laboratory
NESHAPS	National Emission Standards for Hazardous Air Pollutants
NIST	National Institute of Standards and Technology
NPPR	National Pollution Prevention Roundtable
OAR	EPA Office of Air and Radiation
OARM	EPA Office of Administration and Resource Management
OCIR	EPA Office of Congressional and Intergovernmental Relations
OECA	EPA Office of Enforcement and Compliance Assurance
OEI	EPA Office of Environmental Information
OFEE	Office of the Federal Environmental Executive
OMB	Office of Management and Budget
OPEI	EPA Office of Policy, Economics, and Innovation
OPPT	EPA Office of Pollution Prevention and Toxics
OPPTS	EPA Office of Prevention, Pesticides, and Toxic Substances
ORCR	EPA Office of Resource Conservation and Recovery
ORD	EPA Office of Research and Development
P2	Pollution prevention
P2Rx	Pollution Prevention Resource Exchange
PART	Program Assessment Rating Tool
PMN	New Chemicals Premanufacture Notification
PPD	EPA OPPT Pollution Prevention Division
PPIN	Pollution Prevention Information Network
RFP	Request for proposals
SAB	EPA Science Advisory Board
SBIR	Small Business Innovation Research
SRA	Source Reduction Assistance
TRI	Toxics Release Inventory
USDA	U.S. Department of Agriculture
USGBC	U.S. Green Building Council

Appendix 2: DRAFT Sector Strategies

Note: The strategies for these sectors are draft documents that were developed by P2 Program staff as initial thought pieces on activities to explore further.

Following are P2 Program strategies in five sectors: **Chemical & Manufacturing Industries**; **Hospitality**; **Electronics**; **Building & Construction**; **and Municipalities & Institutions**.

This table depicts the intersections between the Plan's five goals and the five sectors:

Goal	Chemicals & Manufacturing	Hospitality	Electronics	Building & Construction	Municipalities & Institutions
1. Reduce GHGs	++	+	++	++	+
2. Prevent toxics	++	+	+	=	+
3. Conserve resources	+	++	+	++	+
4. Business efficiency	++	+	=	=	++
5. Integrate P2	=	=	+	++	+

Key:

++   Sector strategy has a fundamental focus on the Goal

+   Sector strategy addresses Goal to some extent, or as one of several goals

=   Sector strategy has limited or no particular focus on that Goal

DRAFT P2 Program Strategy for Chemical & Manufacturing Industries
DRAFT DOCUMENT LAST REVISED JUNE 2009

EPA's P2 programs have served as a long-time catalyst in promoting cleaner, safer "greener" chemistries, products, processes, and business practices. Fueled by emerging concerns about climate change, the demand for green technology, processes, and products have grown tremendously. However, there remains much uncertainty and confusion over "green" choices. It is critical that EPA help the public and business make green choices easier to understand and act upon and that those choices truly represent environmental improvement. The P2 Program will apply its expertise in chemical risk management, process mapping, lean manufacturing, source reduction, and design for environment to help manufacturers reduce the hazardous materials they produce, use, and release; and help reduce the use and release of chemicals that contribute to climate change.

There are enormous P2 life cycle opportunities to reduce health and environmental impacts throughout the chemical and manufacturing industry sectors. In order for this strategy to be successful, the P2 Program must broadly communicate its unique contributions to solving critical health and environmental issues, offering both tools and approaches that stimulate the development and market acceptance of safer, cleaner, innovative technologies.

The strategy consists of three main approaches to substantially increase reductions in hazardous materials, greenhouse gas emissions, and natural resources usages:

- working in partnership with the chemical industry and manufacturing sectors that have high hazardous chemical and GHG[4] emissions to implement P2 opportunities;
- focusing on finding P2/risk management solutions for specific hazardous materials of concern, including product redesign, process substitution, and informed alternative analysis;
- developing and working with partners to develop sustainable products and to implement sustainable manufacturing practices.

The P2 Program can serve as an authoritative source on the development of product design alternatives and the implementation of chemical risk management and P2 manufacturing practices. There is a great deal of institutional knowledge, experience, and just plain hands-on, know-how across P2 programs.

It is timely and critical to promote P2 integration with other Offices and with OPPT priority chemical programs, including nanoscale materials. It is also important to continue to build on long-standing work of State P2 technical assistance providers in the area of manufacturing and OPPT, OPEI, and Regional efforts to encourage the implementation of projects that combine the strengths of P2 and lean manufacturing. In addition, the P2 Program will focus on increasing coordination with OPPT's New Chemicals Program, which is on the leading edge of the review of new technologies while also providing P2 recognition for chemicals that are better for the environment. Not only does the New Chemicals Program review and recognize new technologies, but also identifies the data gaps and

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[4]Greenhouse gases are generally recognized as: carbon dioxide (CO_2), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride (NF_3). Note HFCs and PFCs are considered large classes of chemical substances that include such chemicals as fluorinated ethers, perfluoropolyethers, and other substances. Methane is also considered a potent GHG but the program's focus should be on anthropogenic sources, such as generation of methane through agricultural activities versus methane releases through natural biological processes such as fermentation of organic matter in wetlands.

research needs for technologies that might also be deserving of recognition if more complete data supported the technology.[5] Regions and States can play a significant role in can play a significant "retail" role in the adoption of technologies through on-site technical assistance at the local level.

Goal: By 2014, substantially reduce the generation and use of hazardous materials, greenhouse gas emissions, and raw materials, energy, and water usage by focusing on partnership opportunities within the chemical and manufacturing industries and furthering the definition and adoption of green design and green manufacturing practices.

Objective 1: Conduct a broad analysis of the chemical and manufacturing sectors, and determine and implement the best opportunities to redesign products and reduce chemicals of concern, as well as GHG emissions and use of raw materials, energy, and water

Key Activities:
- OPPT & Regions undertake an analysis of opportunities to identify key chemical production/use and other manufacturing sectors with the greatest potential for product and process redesign to reduce hazardous materials that also provide substantial greenhouse gas emission reductions. This analysis will organize reductions by sector, location in the larger supply chain(s) and by relevant chemical(s) of concern. This analysis will consider the impacts of over 60 recognized chemicals with global warming potential as well as chemicals of concern for their high hazard potential. The objective will be to cross-walk priority chemicals with products and manufacturing or industrial sectors, looking at factors such as: the energy required when processing solvents, including solvent recovery and reuse; how consumer demand affects manufacturing decisions; and how some national chemical priorities may be best addressed at the regional level.
- OPPT & Regions rank identified opportunities according to criteria such as industry's potential willingness to participate, technical feasibility, role of economic and social factors, and ability to leverage other on-going initiatives
- OPPT & Regions engage in dialogue with other EPA offices/programs and key industry leaders, trade associations, States, Tribes, and other stakeholders to form specific partnership initiatives for a sub-set of chemical/manufacturing sectors on a national and/or regional level
- OPPT and Regions continue work with the pharmaceutical industry, other EPA offices, and other agencies (including the Food and Drug Administration (FDA)) to facilitate information sharing and adoption of best practices and GHG measurement tools in the pharmaceutical processes
- OPPT & Regions develop a framework for "greener" product performance goals for the use of chemicals in products, such as:
  o Use of environmentally preferable products that minimize impacts throughout their life cycle
  o Use of best management practices to reduce chemical exposures and releases from products throughout their life cycle.

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[5] For example, the OPPT New Chemicals Program recently recognized Micronal® PCM (phase change materials); developed by BASF, a product that reduces energy needs for cooling and heating buildings. These low-weight and low-volume materials have proven their effectiveness by providing a high thermal storage capacity to building construction materials such as wall plasters, wall paints, gypsum plasterboard, and concrete blocks. In summer months when room temperatures typically rise, wax inside mircocapsules melts, absorbing excess heat from the air. This reduces the need for mechanical temperature control, e.g., running an air-conditioning system, and also *reduces carbon dioxide emissions from the energy consumed to regulate building temperatures.*

- o Elimination or minimization of the manufacture, processing, and use of all unnecessary chemicals, especially hazardous and/or toxic chemicals in products and processes
- o Use of safer, less persistent, less bioaccumulative, and less toxic chemical substances in products and processes
- o Use of integrated pest management approaches to reduce health and environmental effects associated with exposure to pests and pesticides
- OPPT & Regions review P2, Community Action for a Renewed Environment (CARE), Environmental Justice (EJ) and other grant program solicitations to include language where feasible on encouraging adoption of cleaner, safer technologies
- OPPT & Regions consult with Pollution Prevention Resource Exchange (P2Rx) Centers and National Compliance Assistance Centers to enhance information sharing and adoption of best practices and tools

Milestones:
- By 2010, initiate analysis and ranking of opportunities
- By 2010, develop a framework for chemical assessment to meet greener product performance goals
- By 2010, explore the ability to build on existing partnerships where possible, begin 1-2 industry initiatives based on opportunities identified (including EPA headquarters and regional staff activities, and in coordination with related P2 grant projects). Demonstrate short-term success in key areas.
- By 2010, review technology assessments in individual P2 programs (Green Chemistry, Green Engineering, Design for the Environment, etc.) and develop 1-2 technology diffusion projects, e.g., develop a case study or fact sheet to widely promote in the Regions/States a technology that was recognized through a Green Chemistry award or New Chemicals Premanufacture Notification (PMN) Recognition
- Annually, review P2, CARE, EJ and other grant program solicitations to include language where feasible on encouraging adoption of cleaner, safer technologies
- By 2011, begin to assess results from these initiatives
- By 2013, complete assessment of results from industry initiatives and determine whether to continue and/or begin additional initiatives

<u>Objective 2</u>: Collaborate with others to respond to specific needs for P2 activities related to chemicals of concern, chemicals in products, and associated manufacturing processes

Key Activities:
- OPPT & Regions consult with States, Tribes, industry, academia, environmental groups, environmental justice community groups, and other stakeholders to develop and implement P2 strategies (including Design for the Environment, Green Chemistry, and Green Engineering approaches) for chemicals of concern identified by OPPT.
- OPPT & Regions exchange information with ORD, other EPA offices/programs, and external partners regarding opportunities and potential risks associated with the use of manufactured nanomaterials and nanotechnology, and develop and implement P2 strategies based on information provided under the OPPT programs for nanoscale materials.
- OPPT & Regions support the other P2 sector focus areas (buildings & construction, electronics, hospitality, and municipalities & institutions) by analyzing and assisting with implementation of P2 opportunities associated with products purchased or manufactured in these sectors

- OPPT & Regions, through EPA's Green Suppliers Network (GSN) and Sustainable Futures programs, help original equipment manufacturers identify chemicals of concern utilized within their supply chains and help develop P2 strategies for those chemicals, including product redesign to eliminate target chemicals
- OPPT & Regions work with industry, States, and others to develop P2 solutions for priority chemicals of concern identified by States.
- OPPT & Regions coordinate with States to provide technical and scientific information and assistance for States' green chemistry efforts

Milestones:
- By 2010, identify and begin to implement initial opportunities for source reduction for chemicals of concern identified by OPPT
- By 2010, identify and begin to implement P2 projects related to manufactured nanomaterials/nanotechnology
- By 2010, identify needs of the other P2 sector focus areas in the area of chemicals/manufacturing processes
- By 2010, complete existing project to help original equipment manufacturers in the automobile manufacturing sector identify substitutes for chemicals of concern utilized within their supply chains, and consider additional projects to apply lessons learned from this process to other sectors
- By 2010, develop source reduction and/or substitution strategies to address chemicals of concern that have been identified by States
- By 2011, begin a project to help a specific chemical manufacturing sub-sector, such as the dry cleaning chemical sector, solvent chemical sector, or nail salon chemical sector, to develop P2 strategies, including product redesign, for chemicals of concern

Objective 3: Collaborate with others to develop, communicate, and facilitate the implementation of sustainable manufacturing practices

Key Activities:
- OPPT works with EPA regulatory programs to pursue opportunities to integrate P2 manufacturing and related best practices in other Agency regulations (e.g., January 2008 NESHAPS regulation adopted Design for the Environment (DfE) auto-refinishing best practices)
- OPPT & Regions work with large manufacturers and their suppliers, state P2 technical assistance providers, and National Institute of Standards and Technology (NIST) Manufacturing Extension Partnership (MEP) centers, through EPA's Green Suppliers Network program, to facilitate the adoption by small and medium-size manufacturers of pollution prevention and lean manufacturing best practices
- OPPT works in collaboration with the Department of Energy's Industrial Technologies Program to weave energy efficiency technical assistance into the Green Suppliers Network model
- OPPT & Regions work with OECA and compliance assistance programs to provide industry with information on sustainable manufacturing practices
- OPPT & Regions pursue opportunities to replicate innovative P2 manufacturing practices implemented in P2 grant projects or Regional projects; also leverage ORD's Small Business Innovation Research (SBIR) grant solicitations
- OPPT & Regions collaborate with industry leaders, other EPA programs, federal agencies, States, and non-governmental organizations to define standards or guidelines for

sustainable manufacturing practices and development of a sustainability road map by manufacturers

- OPPT & Regions explore opportunities to communicate and encourage the adoption of sustainable manufacturing practices, including partnerships with financial institutions and other entities that provide supporting infrastructure for businesses

Milestones:
- By 2010, conduct an analysis of targeted opportunities to integrate P2 manufacturing and related best practices in other Agency regulations
- By 2010, conduct an inventory of innovative P2 manufacturing practices implemented in P2 grant projects, Regional P2 projects, or SBIR grant projects and develop a plan to replicate them where possible
- By 2010, establish effective and collaborative MEP/State lean manufacturing and P2 activities in 30 states
- By 2010, conduct energy efficiency assessments as a routine element of the lean and clean Green Suppliers Network approach
- By 2011, work with others to define standards or guidelines for sustainable manufacturing practices and development of a sustainability road map by manufacturers

DRAFT P2 Program Strategy for the Hospitality Sector
DRAFT DOCUMENT LAST REVISED JUNE 2009

The hospitality sector has a large impact on the environment through energy and water use, use of consumable products, and solid and hazardous waste generation. It is estimated that the life cycle of products and services for the global hotel and restaurant sub-sector alone represent 3% of global CO_2 emissions[6]. The hospitality sector reaches nearly every business and consumer in some capacity, and has the ability to influence both its customers by highlighting environmentally friendly practices and its suppliers by demanding greener products and services.

On a national level, P2 Program work in the hospitality sector will follow three main paths: participate in the development of hospitality voluntary consensus standards; work with the hospitality industry on the adoption of more sustainable practices; and work with the public sector on procurement of environmentally preferable hospitality services. Efforts will primarily be focused on green meetings and conferences, lodging, and food and beverage services. The Program will also emphasize coordination and information sharing on regional strategies for additional hospitality sub-sectors, such as casinos, cruise ships, and large entertainment venues.

The P2 Program has several strengths that can help EPA to advance the adoption of more sustainable hospitality practices, including: experience with the development of voluntary, consensus-based standards; experience working with the public sector on green procurement policies and practices; a strong regional/state P2 network with a history of successful work in this sector; and a multimedia perspective that can be helpful in tailoring EPA programs and resources to the needs of a particular sector or audience.

Goal: By 2014, substantially reduce the use of raw materials, hazardous materials, energy, and water and the generation of solid and hazardous waste within the hospitality sector through the promotion of sustainable industry practices and procurement of environmentally preferable hospitality services

Objective 1: Participate in the development of voluntary, consensus-based, ANSI certified green hospitality standards to help define green products and best practices for adoption by the hospitality industry and to help procurement officials/consumers more easily identify environmentally preferable hospitality providers

Key Activities:
- PPD and Regions provide input on the draft ASTM standard for green meetings and events currently under development, as well as encourage participation from a wide range of stakeholders in the standard development process
- PPD and Regions determine if additional voluntary consensus standards are needed for specific sub-segments of the hospitality sector and take necessary actions to facilitate their development

Milestones:
- By 2010, complete participation in the ASTM green meetings and events standard development process, as the standard is expected to become final during the year
- By 2010, determine whether the development of additional standards is needed

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[6] WWF/SustainAbility, *One Planet Business*, 2007, pp. 18-19. Report located at http://www.wwflearning.org.uk/one-planet-business

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<u>Objective 2</u>: Work with the hospitality industry to promote the adoption of sustainable industry practices and environmentally preferable products

Key Activities:
- PPD, Regions, and other HQ programs share information (through monthly or bimonthly calls and an e-mail group) on ongoing EPA efforts in the hospitality sector
- PPD and Regions conduct outreach to national chains, local hospitality providers, and green or sustainable hospitality associations, to gain a better understanding of the information and technical assistance needs of national and local segments of the hospitality sector. This activity will also help EPA to identify change agents in the hospitality sector.
- PPD, Regions, and States work with national chains, local hospitality service providers, local governments, and local industry associations on a variety of actions (tailored to the audience and situation) to encourage the adoption of sustainable practices. Examples include:
  - Organizing outreach/training/workshops for local hospitality providers (with the assistance of local governments, associations, and others)on sustainable practices and resources/assistance provided by relevant EPA partnership programs[7]
  - Working with the hospitality industry to help them develop sustainability action plans
  - Entering into memoranda of understanding with hospitality providers related to the adoption of sustainable practices and EPA partnership program participation
- PPD and Regions work with the OPEI Partnership Programs Coordination Team and relevant EPA partnership programs to develop an EPA Green Hospitality website to highlight hospitality-related information & resources available, including the availability of standards for green hospitality practices. Also, work with P2Rx to add relevant information to the P2 Topic Hub for Hospitality.
- PPD and Regions conduct outreach to national chains, local hospitality providers, and green or sustainable hospitality associations, directories, membership groups and certifiers regarding EPA partnership resources tailored for their sector, and voluntary consensus standards/national guidance they should consider adopting
- PPD and Regions explore the potential for additional activities to promote the adoption of sustainable practices by the hospitality industry, such as:
  - Including green hospitality in P2 grant RFPs as feasible and appropriate
  - Enhancing information sharing on green hospitality practices through effective use of the Pollution Prevention Resource Exchange (P2Rx) Network
  - Coordinating with GSN to help green the hospitality sector supply chain
  - Developing a "Green Hospitality" curriculum for colleges and training schools
  - Convening and/or presenting at relevant conferences such as the Annual Green Hotels Conference, Hotel Investment Conference, et al.

Milestones:
- By 2010, set up mechanisms for EPA coordination on work in the hospitality sector
- By 2010, conduct initial outreach to major national chains, local providers, and others in the lodging and food & beverage sectors to assess information & assistance needs
- By 2012, establish an EPA Green Hospitality Website

<u>Objective 3</u>: Assist the federal government and others in the public sector with the procurement of environmentally preferable hospitality services

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[7] These programs may include but are not limited to: Energy Star, WasteWise, WaterSense, the Resource Conservation Challenge, Environmentally Preferable Purchasing, Integrated Pest Management, GreenScapes and Green Suppliers Network.

Key Activities:
- Regions and PPD share ideas for policies and implementation of best practices related to greening meetings and travel
- PPD works with the EPA Office of Administration and Resource Management (OARM) to implement agency-wide policies (initially on green meetings; additional policies on travel/lodging when appropriate guidance is available). The Region 9 Green Conference and Meeting Policy may be used as a template.
- PPD and Regions conduct outreach to federal, state, and local government facilities on sample policies and ways to green their meetings and travel through their environmental management systems (EMS)
- PPD works with OARM, the Office of the Federal Environmental Executive (OFEE), and the General Services Administration (GSA) to incorporate national ASTM or other green meeting standard (if appropriately stringent) into EPA and federal acquisition regulations
- PPD works with OFEE and GSA to explore the possibility of amending the Federal Travel Regulation (FTR) to incorporate the sustainable accommodations portion of the ASTM green meeting standard
- PPD works with OFEE to explore the possibility of establishing a hospitality-focused program for the federal government, similar to the Federal Electronics Challenge

Milestones:
- By 2010, work with OARM to establish an EPA Green Conference & Meeting Policy
- By 2012, work with OARM to incorporate national ASTM green meetings and events standard into EPA acquisition regulations
- By 2012, work with OFEE, GSA, and others to incorporate national ASTM green meetings and events standard in to the Federal Acquisition Regulation
- By 2012, work with OFEE and GSA to explore the possibility of amending the Federal Travel Regulation (FTR) to incorporate the sustainable accommodations portion of the ASTM green meeting standard
- By 2012, begin exploring the possibility of establishing a hospitality-focused program for the federal government

Objective 4: Assess environmental impacts of the broader hospitality sector in order to help further inform and shape on-going EPA/P2 Program activities in this sector

Key Activities:
- PPD and/or Regions conduct an analysis or compile existing information on current practices, environmental impacts (e.g., water & energy use, hazardous material use, waste generation, etc.), potential for environmental achievements (e.g., reduced water & power use, pounds of pollution), and possible cost savings of the hospitality sector
- PPD and Regions utilize this information to establish baselines and numerical targets for activities in this sector

Milestone:
- By 2010, conduct analysis/research to enhance understanding of sector impacts

Electronics provide an important support system for all facets of our economy, including technological assistance for environmental protection activities. However, electronics also have significant environmental impacts. Electronics use a considerable amount of energy throughout their life cycle – primarily during use, but also during manufacturing and end-of-life (e.g., through recycling). This energy use results in significant greenhouse gas and other emissions (e.g., mercury from coal-fired energy generation). Many electronics contain hazardous materials, which may present risks during manufacturing, use, and end-of-life. The current demand for cutting-edge electronics has resulted in relatively short life spans for most electronics, which may lead to increased natural resource use (both renewable and non-renewable) to produce new electronics, and the possible loss of natural resources embodied in electronics that are discarded.

The P2 Program provides unique technical expertise, including Design for the Environment (DfE) and Environmentally Preferable Purchasing (EPP) programs, that may be applied to the management of the electronics life cycle. This technical expertise, coupled with EPA's authority and credibility, also allows the P2 Program to act as a convener for stakeholder groups focused on reducing the environmental impacts of electronics.

The P2 Program also uniquely supports the federal government in its efforts to meet the requirements of Executive Order 13423 and the Federal Acquisition Regulation (FAR), which require the purchase of environmentally preferable electronics, as well as environmentally responsible use and end-of-life management of federal electronics.

This strategy encompasses opportunities to reduce the environmental impacts associated with each phase of the electronics life cycle: design and manufacturing; acquisition and procurement; operation and maintenance; and end-of-life management. The P2 Program's participation in the development of additional IEEE standards for environmentally preferable electronics and efforts to encourage increased utilization of the Electronic Product Environmental Assessment Tool (EPEAT) will further facilitate the ability of purchasers to identify greener electronics. EPEAT also provides an impetus for electronics manufacturers to continually improve the design of these products. The DfE program can provide its expertise to help manufacturers find the most environmentally sound design solutions. Finally, managing and promoting the Federal Electronics Challenge (FEC) and associated best practices for the entire electronics life cycle will ensure a comprehensive feedback loop to prevent risk shifting from one life- cycle phase to another. The best practices developed and refined through the FEC program can be transferred from the federal sector to the private sector, encouraging responsible life- cycle management of electronics by both public and private organizations.

Implementing the strategy for the electronics sector will result in continued reductions in the use of hazardous materials toxic chemicals, energy, water, and raw materials throughout the electronics life cycle, as well as reductions in greenhouse gas and other emissions, solid waste, hazardous waste, and risks from improper handling of obsolete electronic products.

Goal: By 2014, improve the manufacturing, purchasing, use, and end-of-life management of electronics in order to reduce or eliminate hazardous materials toxic substances in electronic products; reduce energy use, and associated greenhouse gases/other emissions that result from electronics manufacturing, use, and disposal; and reduce natural resource use and loss associated with the manufacturing and rapid disposal of electronic products.

<u>Objective 1</u>: Participate in the development of additional IEEE standards for environmentally preferable electronics, for use in the Electronic Product Environmental Assessment Tool (EPEAT)

Key Activities:
- PPD, the OPPT Economics, Exposure, and Technology Division (EETD), and Regions work with ORCR, ENERGY STAR, SmartWay, Green Power Partnership, the Indoor Air Program, the Green Building Workgroup, and others to gather information about environmental criteria to be included in IEEE standards for environmentally preferable imaging equipment, televisions, servers, and mobile devices
- PPD, Regions, and ORCR work with electronics manufacturers, institutional purchasers, non-profit organizations, academia, and others, using the IEEE's voluntary consensus-based standard development process, to create multi-attribute standards for imaging equipment, televisions, servers, and mobile devices

Milestones:
- By 2010, work with others to complete the IEEE standards for televisions and imaging equipment.
- By 2011, work on development of the IEEE standards for mobile devices and servers has begun.

<u>Objective 2</u>: Work with federal and other institutional purchasers to ensure utilization of EPEAT and realization of associated environmental benefits

Key Activities:
- PPD, ORCR, Regions, and the Office of the Federal Environmental Executive conduct outreach and education to ensure that federal agencies purchase and lease EPEAT-registered electronic products, and track EPEAT-registered product purchases and leases by Agency
- PPD, ORCR, Regions, and the Office of the Federal Environmental Executive conduct outreach to federal agencies on new EPEAT product categories once the standards are finalized
- PPD, ORCR, Regions, and the Office of the Federal Environmental Executive work with electronic product vendors to ensure that EPEAT-registered products are prominently labeled in product catalogues
- PPD, ORCR, Regions, and third party organizations conduct outreach and educational activities to encourage other public and private sector organizations to purchase and lease EPEAT-registered electronic products

Milestone:
- By 2010, 95% of eligible electronic equipment purchased or leased annually by FEC partners is EPEAT-registered

<u>Objective 3</u>: Work with manufacturers to improve the design and manufacture of electronics products to reduce environmental impacts

Key Activities:
- PPD and Regions look for ways to incorporate EETD/DfE life cycle assessments (LCAs) as well as other hazard assessment work in this industry, including current activities with the cable and wire industry

- EETD explores the possibility of conducting a screening-level LCAs to compare nano-structured Lithium-ion (Li-ion) batteries to traditional nickel metal hydride (NiMH) batteries, as used in hybrid vehicles
- EETD develops hazard review and combustion test data on alternative flame retardants to inform selection of flame retardants for circuit boards
- OPPT and Regions develop an initial framework for assessing the suitability of alternative, safer chemicals for EPEAT products
- EETD, PPD, and Regions collaborate with States, academia and industry to develop holistic environmental performance assessment of selected electronics manufacturing processes and to identify improvement opportunities and more sustainable processes

Milestones:
- By 2010, explore project feasibility, form partnerships, and conduct scoping for a screening-level life cycle assessment to compare nano-structured Li-ion batteries to traditional NiMH batteries
- By 2010, release public report from Partnership on Flame Retardants in Printed Circuit Boards
- By 2010, develop an approach for assessing the suitability of alternative, safer chemicals for EPEAT products

Objective 4: Encourage the adoption of best management practices throughout the life cycle of electronic products in the public and private sectors

Key Activities:
- PPD, Regions, and ORCR update the Federal Electronics Challenge's (FEC) collection of best management practices and guidance, as needed, to reflect the best available electronics stewardship practices
- PPD, Regions, and ORCR continue to support and use the FEC to assist federal agencies in implementing best management practices within the purchasing, use, and end-of-life phases of electronics
- PPD coordinates with the Regions to include electronics stewardship as a priority focus in P2 Grant RFPs as feasible and appropriate, and to support States' efforts to develop similar programs and policies for state and local government, such as the State Electronics Challenge (SEC)
- PPD and Regions consult Pollution Prevention Resource Exchange (P2Rx) Centers to enhance outreach and information sharing on electronics stewardship practices
- Regions, ORCR, and PPD utilize the Resource Conservation Challenge as a mechanism to coordinate and share information related to electronics stewardship programs
- PPD and Regions work with ORCR, the EPA Office of Environmental Information (OEI), OAR, and others to provide tools to private corporations to help them adopt best management practices. Examples include:
  o Providing tools and information on electronics best management practices to information technology (IT) companies
  o Conducting outreach to small and medium-sized businesses and chambers of commerce on green electronics
  o Working with state & local agencies and businesses to establish local electronics take-back networks, especially in rural areas

Milestone:
- By 2010, 75% of federal employees will be covered by a federal facility or agency that is part of the FEC

Objective 5: Conduct or compile additional research on the universe of environmental impacts of electronic products over their life cycle, in order to help inform and shape on-going EPA/P2 Program activities in this area

Key Activities:
- PPD, EETD, and Regions work with ORCR to consolidate best available information on environmental impacts of electronics management practices, in order to create a cohesive picture across the electronics life cycle
- PPD, EETD, and Regions work with ENERGY STAR to obtain additional information about embodied greenhouse gas emissions in electronic products produced in other countries
- PPD, EETD, and Regions utilize information gathered under this objective to assess numerical targets for activities in this sector

Milestone:
- By 2010, as resources allow, create a compendium of best available information on environmental impacts of electronics management practices

The design, construction, operation, maintenance, and removal and recycling of building debris takes enormous amounts of energy, water, and materials, and generates large quantities of waste, air and water pollution, as well as creating stormwater runoff and heat islands. Buildings also develop their own indoor environments, which may present an array of health challenges. Where and how they are built affects wildlife habitat and corridors and the hydrologic cycle, while influencing the overall quality of human life.

In the U.S., this sector represents 39% of energy use, 69% of electricity use, and 38% of CO_2 emissions. Urban runoff is a leading source of water quality impairment, and buildings account for 12% of water use. Buildings and construction also account for 36% of non-industrial waste generation. In addition, people spend 90% of time indoors, where pollution levels are 2-5 times higher, affecting health and productivity. The U.S. will spend an estimated $30 trillion on new development from 2000-2030, resulting in half of the US building stock being newly constructed by 2030.

EPA Green Building Strategy
The overall goal of the EPA Green Building Strategy is to reduce the environmental and human health impacts from the nation's buildings by being a source of credible information on cost-effective green building practices and products. By actively promoting this information in important stakeholder processes, EPA can help ensure that green building approaches that deliver the greatest environmental benefits in the most feasible and cost-effective ways rapidly become standard industry practice.

To achieve this goal, the strategy is built upon five complementary objectives:

- Lead by example with state-of-the-art EPA buildings
- Expand public understanding of why green building is important
- Inform decisions with better standards
- Promote widespread adoption of green building practices
- Enhance performance through research

Each of these five objectives targets critical barriers to the advancement of effective green building in the United States.

P2 Program Role
The P2 Program has unique experience and expertise to contribute to the EPA Green Building Strategy. The P2 Program has co-chaired the EPA Green Building Workgroup since its inception, and the EPA Office of Prevention, Pesticides, and Toxic Substances (OPPTS) Deputy Assistant Administrator is an active member of EPA's Green Building Management Steering Committee. In addition to specific expertise in developing voluntary consensus standards, P2 Program capabilities relate to some of the most pressing needs in the green building movement:

- information on toxics/safer chemical substitutes for building materials;
- life cycle assessment (LCA) of environmental impacts of building products/assemblies
- guidance on environmentally preferable building products and services (i.e., construction and operations & maintenance services)

Indicators of these needs include a proliferation of "green" and "healthy" building product claims and the U.S. Green Building Council's (USGBC) call for robust product standards based on LCA and risk assessment. EPA can be most effective in meeting these needs through coordination and partnership – namely, cross-agency engagement via the Green Building Workgroup and the Green Building Management Steering Committee; partnership with key Federal agencies including the Office of the Federal Environmental Executive (OFEE), DOE, USDA, and NIST; partnership with key external partners including USGBC, National Association of Home Builders (NAHB), ASTM International, and product manufacturers.

P2 Programs can contribute knowledge and expertise to the plethora of standards development activities (e.g., LEED, GreenGlobes, ASTM, GreenSeal, NSF International, GreenGuard), thereby maximizing EPA's influence and improving standard operating procedures in the building materials and construction sectors. Helping to make green building practices the norm through widespread adoption of voluntary consensus standards will help to minimize adverse environmental impacts.

Goal: To substantially reduce the hazardous material-related environmental & public health impacts of building and construction

Objective 1: Use OPPTS's scientific/technical expertise & credibility to accelerate both the supply and demand of green products and services in the marketplace

Objective 2: Engage the Federal community in green building voluntary consensus standards development and use

Objective 3: Support research to fill scientific & technical gaps blocking progress, including life cycle assessment & risk assessment

Key Activities:
- Work with EPA's Green Building Workgroup and others, including standards development bodies, to identify needed information for specific building & product standards.
- Work with other EPA programs, such as Energy Star, to support reductions in GHG emissions, use of toxic chemicals, and use of energy, water, and raw materials, and participate in EPA Green Building Task Groups: Green Building Guiding Principles, Green Building Research Strategy, EPA Green Building Metrics, and Existing Buildings and Homes
- Consult with stakeholders to identify priority building product categories for analysis, and disseminate results widely to key industry groups and interested public. Utilize the Pollution Prevention Resource Exchange (P2Rx) Network to enhance information sharing. For each product category, identify:
  o Toxic or hazardous components of concern
  o Safer substitutes or alternative products
  o Life cycle impacts of substitutes
- Develop information, especially on toxics/safer chemical substitutes for building materials[8], and help make that information available in a user-friendly format.

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[8] For example, the Green Chemistry Program recently recognized an alternative adhesive made from soy flour for use in plywood and other wood composites. In 2006, Columbia Forest Products, Inc. used the soy-based adhesive to replace more than 47 million lbs of formaldehyde-based conventional adhesives.

- Advance and promote the utilization of life cycle assessments and risk assessments of building products and assemblies
- Provide other assistance, as necessary, that utilizes the P2 Program's specific expertise in risk assessment, risk management, life cycle assessment, standards development processes, and environmentally preferable purchasing guidance.
- Include green building and construction as a priority in P2 Grant RFPs, as feasible and appropriate
- Coordinate with State P2 technical assistance providers to support implementation of green building best practices and purchase of greener building products
- Support EPA efforts to drive demand for green features through consumer education, including web-based green home information and resources, Administrator events & speaking engagements, and other means of outreach

Milestones:
[TBD]

DRAFT P2 Program Strategy for Municipalities & Institutions
DRAFT DOCUMENT LAST REVISED JUNE 2009

This strategy is focused on providing municipalities[9] and communities with comprehensive, multimedia-focused information that can help them gain an understanding of their environmental footprint and implement more sustainable practices. Since municipalities and communities are comprised of a variety of businesses, institutions, and facilities, developing information that is tailored to the needs of these entities becomes an important component of any effort to reduce the environmental footprint of the community in which they reside.

Municipalities have considerable influence over policies and guidelines that affect operations within their jurisdictional boundaries, and therefore play a central role in furthering the adoption of sustainable practices achieved through green building guidelines, green roads, smart growth planning, construction and demolition guidance, etc.

Municipalities themselves also use a considerable amount of energy and resources to maintain their infrastructure. Energy is used to light and heat buildings, run wastewater treatment plants, and operate fleets of vehicles. Hazardous materials are used to provide services, construct and maintain buildings, manage streets and open spaces, and operate vehicles. Similarly, solid waste, hazardous waste and other pollutants are generated and managed by municipalities. Beyond the direct activities associated with managing a municipality, communities are also concerned about issues such as toxic chemicals used and released by local institutions, industries, and facilities, greenhouse gas emissions and local contributions to climate change, water/stormwater management and linkages to water quality, and the health of local ecosystems.

Many cities have embarked on developing GHG inventories and writing climate action plans for their communities. EPA has extensive information, resources, tools, and programs that can be helpful to municipalities/communities as they work to reduce their environmental footprints and implement their climate action plans. A number of efforts are underway at EPA Headquarters and in the various Regions to bundle partnership programs. However, there is a need to collaborate further among EPA offices and Regions to package this information in a comprehensive way and provide technical assistance in order to facilitate the adoption of more sustainable practices on a local level. There are a number of membership organizations that assist cities and towns with assessing local environmental footprints and tracking progress. Collaboration and distribution of EPA's materials through these organizations will ensure broad outreach and efficient distribution. A large portion of this strategy is based on using what has been learned by these organizations, acting as a convener, and helping to replicate achievements of communities on a wider scale.

The P2 Program's multimedia perspective, strong regional/state P2 network, and P2 technical expertise will support the program's contributions in this arena. Working with experts across the Agency and at the state and local levels, the P2 Program will emphasize approaches such as environmental management systems, environmentally preferable

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[9] A "municipality" is a public administrative entity that commonly denotes a city, town, or village, or a small grouping of them. A municipality is typically governed by a mayor and a city council or municipal council. Municipal services include sanitation (both sewer and refuse), water, streets, schools, food inspection and other health department issues and transportation. In 2002, the nation's local governments totaled 3,034 counties, 19,429 municipalities, and 16,504 townships.

purchasing, design for the environment, low-impact development, green building, energy efficiency, and pollution prevention for wastewater and water utilities.

Goal: By 2014, work with others in EPA and externally to collect information on existing resources/programs and develop a comprehensive package of sustainability resources for municipalities/communities and the institutions or facilities within their jurisdictions, such as schools, colleges & universities, hospitals, building managers, convention centers and other venues, and manufacturing facilities, to help them substantially reduce their environmental footprint

Objective 1: Gather additional information to determine how P2 Program networks, resources, and individual program components could serve the needs of municipalities/communities and the institutions/facilities within their jurisdictions

Key Activities:
- PPD, Regions, and EETD develop an inventory of recent and current P2 Program (HQ, Regional, Grant) activities with municipalities and communities, which would also include information about lessons learned, successful strategies, etc.
- PPD and Regions learn more about what other EPA programs[10] are doing to provide assistance to local governments, municipalities, and communities through individual meetings and regular cross-Agency conference calls (discussions currently underway with the EPA Office of Congressional and Intergovernmental Relations (OCIR) and OAR about setting up a cross-Agency local governments group)
- PPD and Regions, in concert with EETD, States, and other EPA programs, develop an initial assessment of which P2 Program initiatives, information resources, tools, etc. might be useful to municipalities/communities, by Region and on a national level
- PPD, Regions and EETD prioritize and focus outreach and education on a few "effective" key programs for implementation, especially those that will help municipalities meet their GHG emission reduction goals. The effectiveness of EPA programs should be based on a variety of program elements, such as:
  - a track record for effectively reducing GHG emissions (directly or indirectly)
  - a system for measuring and reporting results that can be converted to GHG reductions
  - relevance to local governments (or relevant to GHG sources that local government may try to impact)
  - a system for signing up partners
  - ideally, a process for participants to set targets/goals
  - ideally, though not required, a system of recognition
- PPD, Regions, States, and other interested EPA offices (such as OCIR, OAR, OPEI, ORCR, and OECA) reach out to national/regional/local government associations or NGOs[11] to assess the needs of local governments/municipalities/communities for consolidated/ comprehensive information about sustainable practices and related EPA programs and

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[10] Programs/initiatives include but are not limited to: Smart Growth, EPA's Clean Energy Programs including Energy Star, CARE, Green Building Workgroup, Design for the Environment, Compliance Assistance Centers, Environmentally Preferable Purchasing, Green Suppliers Network, GreenScapes, WaterSense, WasteWise, Pay-as-You-Throw, OWOW Watershed Academy, Tools for Schools, and Partnership for Sustainable Healthcare, Green Power Partnerships, Climate Leaders, EPEAT, Environmental Management Systems, Green Venues, Sustainable Skylines, Sustainable Cities, etc.

[11] Including the National Pollution Prevention Roundtable (NPPR), P2Rx, the National Association of Counties (NACo), US Green Building Council (USGBC), and the International Council for Local Environmental Initiatives (ICLEI).

resources, including P2 assistance, resources, etc.

Milestones:
- By 2010, start participating in regular conference calls/meetings with other EPA programs in both the Regions and Headquarters that work with local governments
- By 2010, collect information on various Regional and Headquarters efforts and then create an inventory of P2 program activities with municipalities and communities
- By 2010, assess the needs of local governments/municipalities/communities
- By 2010 address the needs of local governments/municipalities/communities to implement their climate action plans with EPA programs to reduce their GHG emission reduction goals

Objective 2: Conduct outreach and provide assistance to local governments/ municipalities and communities on P2 programs, tools, and information resources

Key Activities:
- PPD and Regions gather, develop, tailor and/or package P2 resources for local governments and communities, based on feedback obtained under Objective 1
- PPD and Regions, together with EETD, States, and other EPA programs, identify opportunities to conduct outreach to national organizations/associations that represent local governments, CARE communities, and others regarding P2 and other EPA information, tools, resources, technical assistance, etc.
- PPD and Regions coordinate with EETD, States, and others to provide information and assistance on P2 tools and programs to other EPA programs to help enhance their offerings to municipalities/communities
- PPD and Regions include as a priority in P2 Grant RFPs (as feasible and appropriate) a focus on projects that include P2 technical assistance for municipalities/communities and the institutions within their jurisdiction. For example, a P2 internship program that provides municipalities with energy benchmarking and conservation support, or a program to help cities implement GHG inventories and climate action plans
- PPD and Regions consult with Pollution Prevention Resource Exchange (P2Rx) Centers on enhancing outreach and information sharing for local governments/municipalities and communities on sustainable practices
- Regions and PPD facilitate information sharing among grantees to replicate effective strategies for working with municipalities/communities

Milestones:
- By 2010, package existing P2 resources with other bundles of bundles (e.g., EPA Construction Initiative, *The Business Guide to U.S. EPA Climate Partnership Programs*, EPA's Clean Energy-Clean Environment Municipal Network, etc.) for municipalities/communities and develop a plan to create additional resources or technical assistance offerings
- By 2010, begin outreach to local governments/municipalities/communities on P2 resources and other EPA resources, information, tools, etc.
- By 2010, include work with municipalities/communities as a priority within the P2 Grant RFPs

Objective 3: Participate in efforts to develop and implement an EPA strategy for local governments

Key Activities:

- PPD and Regions collaborate with OCIR, OAR, OECA, and other EPA offices to develop an EPA strategy for local governments that is based on providing comprehensive information and assistance related to EPA programs. Initial ideas of the P2 Program for activities of this cross-Agency strategy include:
  o Reviewing the needs of local governments/communities and creating more comprehensive packages or bundles of information and resources. This effort would likely be limited in focus at first, and could include:
    o Sub-sets of information and tools focused on an environmental impact of concern to local governments/communities (energy/GHG emissions, water usage or water pollution, or toxics use/emissions)
    o Sub-sets of information and tools that are broader in environmental scope (i.e., have more of a comprehensive sustainability focus), but focused on specific types of institutions or facilities within a community (colleges/universities, manufacturing facilities)
  o Developing an EPA web portal (or combining and enhancing existing EPA web sites) for local governments/communities that provides a comprehensive overview of sustainability issues specific to local governments/communities and EPA programs and resources available
  o Supporting existing or establishing new partnership and recognition programs for local governments/ communities

Milestone:
- By 2011, develop a cross-Agency strategy for working with local governments