Summary of ITIAC Duties

Summary of 42 U.S. Code § 17114

Meeting Frequency: At least 2 times per year, at the call of the Chair

Purpose: Advise the Secretary on the *Industrial Emissions Reduction Technology Development Program*

- Propose missions and goals
- Advise on technologies within *focus areas*
  - Identify and evaluate technologies being developed by the private sector
  - Identify technology gaps in the private sector or other Federal agencies and make recommendations to close gaps
  - Survey and analyze barriers to adoption of emissions reduction technologies
  - Recommend technology screening criteria to encourage adoption of technology by the private sector
- Develop a strategic plan for the program
- Produce reports on findings and on evaluation of the program

Technology Focus Areas 42 U.S. Code § 17113(c)

1. Industrial production processes, including technologies and processes that—
   a. Achieve emissions reduction in high-emissions industrial materials production processes, including production processes for iron, steel, steel mill products, aluminum, cement, glass, pulp, paper, and industrial ceramics;
   b. Achieve emissions reduction in medium- and high-temperature heat generation, including—
      i. through electrification of heating processes;
      ii. through renewable heat generation technology;
      iii. through combined heat and power; and
      iv. by switching to alternative fuels, including hydrogen and nuclear energy;
   c. Achieve emissions reduction in chemical production processes, including by incorporating, if appropriate and practicable, principles, practices, and methodologies of sustainable, green chemistry and engineering;
   d. Leverage smart manufacturing technologies and principles, digital manufacturing technologies, and advanced data analytics to develop advanced technologies and practices in information, automation, monitoring, computation, sensing, modeling, and networking to--
      i. model and simulate manufacturing production lines;
      ii. monitor and communicate production line status;
      iii. manage and optimize energy productivity and cost throughout production; and
      iv. model, simulate, and optimize the energy efficiency of manufacturing processes;
   e. Minimize the negative environmental impacts of manufacturing and sustainable chemistry while conserving energy and resources, including--
      i. by designing products that enable reuse, refurbishment, remanufacturing, and recycling;
      ii. by minimizing waste from industrial processes, including through the reuse of waste as other resources in other industrial processes for mutual benefit; and
      iii. by increasing resource efficiency; and
   f. Increase the energy efficiency of industrial processes;
2. Alternative materials that produce fewer emissions during production and result in fewer emissions during use, including—
   a. Innovative building materials;
   b. High-performance lightweight materials; and
   c. Substitutions for critical materials and minerals;
3. Development of net-zero emissions liquid and gaseous fuels;
4. Emissions reduction in shipping, aviation, and long-distance transportation;
5. Carbon capture technologies for industrial processes;
6. Other technologies that achieve net-zero emissions in nonpower industrial sectors, as determined by the Secretary, in consultation with the Director; and
7. High-performance computing to develop advanced materials and manufacturing processes contributing to the focus areas described in paragraphs (1) through (6), including—
   a. Modeling, simulation, and optimization of the design of energy efficient and sustainable products; and
   b. The use of digital prototyping and additive manufacturing to enhance product design

ITIAC has experience and knowledge in all major focus areas.

Reports

Summary of 42 U.S. Code § 17114(f)

Frequency: Not later than 2 years after 12/27/2020, and every three years thereafter, submit to Secretary; 60 days after receipt, Secretary submits copy to Congress

Report Contents:

Advise on Technologies

- Describe how committee has carried out duties and any relevant findings
- Identify technology innovation opportunities
- Identify technology gaps in the private sector or other Federal agencies
- Recommend improvements to technology screening criteria and management of the program
- Recommend changes to focus areas, if necessary

Program Evaluation

- Evaluate progress and RD&D activities
- Progress made in achieving goals of the strategic plan and, if necessary, an update to the strategic plan
- Review management, coordination, and industry utility of the program
- Assess the extent to which progress has been made under the program in developing commercial, cost-competitive technologies in each focus area
- Assess the effectiveness of the program in coordinating efforts within DOE and with other Federal agencies