

Technologies for Goal #1: Reduce Emissions from End Use and Infrastructure

	NEAR-TERM	MID-TERM	LONG-TERM
Transportation	<ul style="list-style-type: none"> Hybrid & Plug-In Hybrid Electric Vehicles Clean Diesel Vehicles Alternative and Fuel-Flexible Vehicles Improved Batteries, Energy Storage Power Electronics Engineered Urban Designs Reduction of Vehicle Miles Traveled Improved Air Space Operations 	<ul style="list-style-type: none"> Fuel Cell Vehicles and H₂ Fuels Efficient, Clean Heavy Trucks Cellulosic Ethanol Vehicles Intelligent Transport Systems Integrated Regional Planning Low-Emission Aircraft Intercity Transport Systems 	<ul style="list-style-type: none"> Zero-Emission Vehicle Systems Optimized Multi-Modal Intercity & Freight Transport Widespread Use of Engineered Urban Designs & Regional Planning Very Low Aviation Emissions (all GHGs)
Buildings	<ul style="list-style-type: none"> High-Performance, Integrated Homes Energy-Efficient Building Materials High-Efficiency Appliances Solar Control Windows 	<ul style="list-style-type: none"> “Smart” Buildings Solid-State Lighting Ultra-Efficient HVACR Intelligent Building Systems Neural Net Building Controls 	<ul style="list-style-type: none"> Energy Managed Communities Low-Power Sensors with Wireless Communications
Industry	<ul style="list-style-type: none"> Improved Processes in Energy-Intensive Industries High-Efficiency Boilers and Combustion Systems Greater Waste Heat Utilization Improved Recyclability and Greater Use of Byproducts Bio-Based Feedstocks 	<ul style="list-style-type: none"> Transformational Technologies for Energy-Intensive Industries C&CO₂ Managed Industries Superconducting Electric Motors Efficient Thermoelectric Systems Advanced Separation Technologies Low-Emission Cement Alternatives Water and Energy System Optimization 	<ul style="list-style-type: none"> Integration of Industrial Heat, Power, Processes and Techniques High-Efficiency, All-Electric Manufacturing Widespread Use of Bio-Feedstocks Closed-Cycle Products & Materials
Electric Grid & Infrastructure	<ul style="list-style-type: none"> Distributed Generation Smart Metering & Controls for Peak Shaving Long-Distance DC Transmission High-Temperature Superconductivity Demonstrations Power Electronics Composite Conductor Cables 	<ul style="list-style-type: none"> Energy Storage for Load Leveling Neural Net Grid Systems Advanced Controls and Power Electronics 	<ul style="list-style-type: none"> Superconducting Transmission and Equipment Standardized Power Electronics Wireless Transmission

Figure 4-11. Technologies for Goal #1: Reduce Emissions from End Use and Infrastructure

(Note: Technologies shown are representations of larger suites. With some overlap, “near-term” envisions significant technology adoption by 10 to 20 years from present, “mid-term” in a following period of 20-40 years, and “long-term” in a following period of 40-60 years. See also List of Acronyms and Abbreviations.)