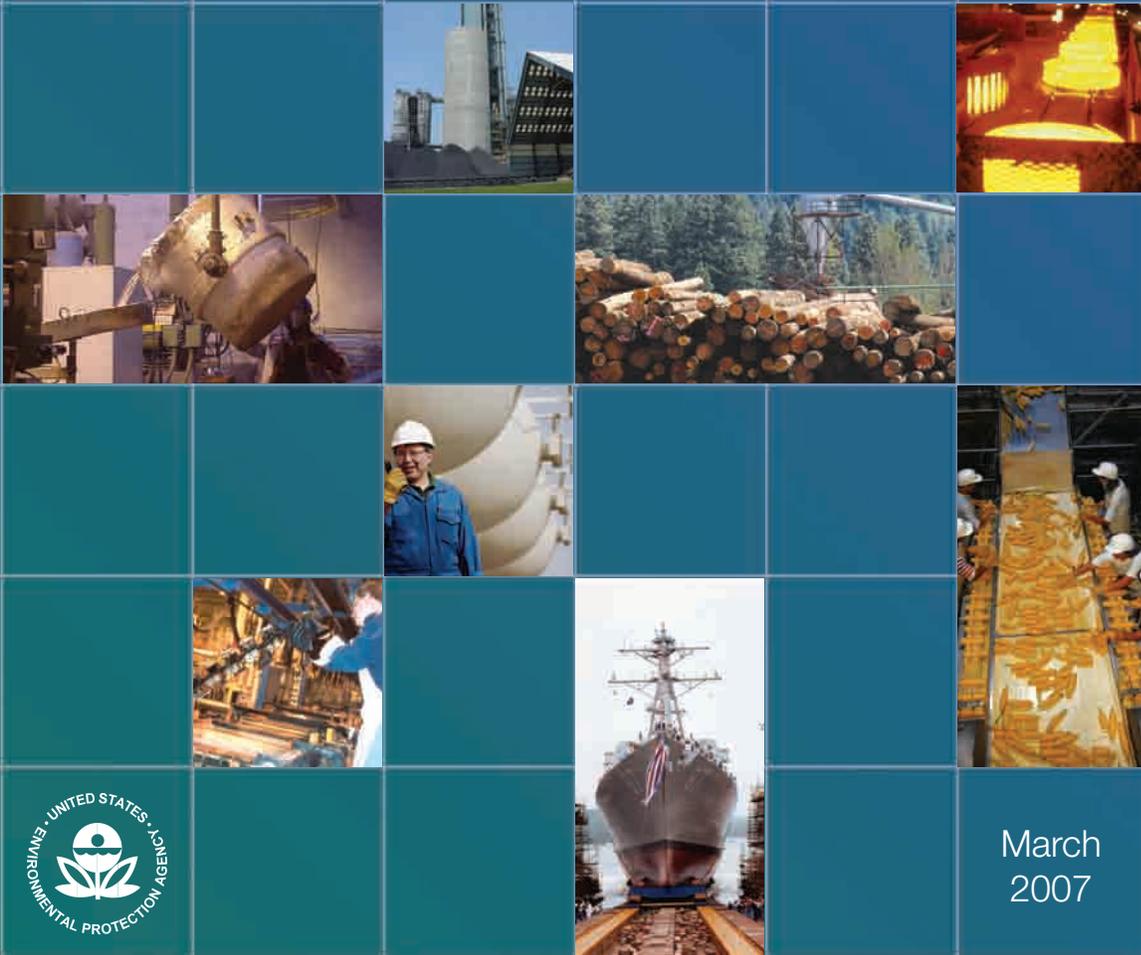


US EPA ARCHIVE DOCUMENT

# Energy Trends in Selected Manufacturing Sectors:

Opportunities and Challenges  
for Environmentally Preferable  
Energy Outcomes

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 SectorStrategies

March  
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U.S. Environmental Protection Agency

Energy Trends  
in Selected Manufacturing Sectors:  
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Energy Outcomes

Final Report

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**Prepared for:**

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Office of Policy, Economics, and Innovation  
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## References

- <sup>1</sup> U.S. Department of Energy, Energy Information Administration. *Annual Energy Outlook 2006* [DOE/EIA-0383(2006)] Supplement Tables 23 through 32. (February 2006). Available at [www.eia.doe.gov/oiia/aeo/supplement/](http://www.eia.doe.gov/oiia/aeo/supplement/).
- <sup>2</sup> U.S. Department of Energy, Energy Information Administration. *Annual Energy Review 2005* [DOE/EIA-0384(2005)] (July 2006).
- <sup>3</sup> U.S. Department of Energy, Energy Information Administration. *Annual Energy Review 2005* [DOE/EIA-0384(2005)] (July 2006).
- <sup>4</sup> U.S. Department of Energy, Energy Information Administration. *Annual Energy Review 2005*, Table 8.4b [DOE/EIA-0384(2005)] (July 2006). Available at <http://www.eia.doe.gov/emeu/aer/>.
- <sup>5</sup> U.S. Department of Energy, Energy Information Administration. *Annual Energy Review 2005*, Table 2 [DOE/EIA-0384(2005)] (July 2006). Available at <http://www.eia.doe.gov/emeu/aer/consump.html>.
- <sup>6</sup> U.S. Department of Energy, Energy Information Administration. *Annual Energy Review 2005* [DOE/EIA-0384(2005)] (July 2006).
- <sup>7</sup> U.S. Department of Energy, Energy Information Administration. *Annual Energy Review 2005* [DOE/EIA-0384(2005)] (July 2006).
- <sup>8</sup> U.S. Department of Energy, Energy Information Administration. *Annual Energy Review 2005*, Table 6 [DOE/EIA-0384(2005)] (July 2006). Available at [http://www.eia.doe.gov/emeu/aer/pdf/pages/sec6\\_13.pdf](http://www.eia.doe.gov/emeu/aer/pdf/pages/sec6_13.pdf).
- <sup>9</sup> U.S. Department of Energy, Energy Information Administration. *Annual Energy Review 2005*, Table 5 [DOE/EIA-0384(2005)] (July 2006). Available at <http://www.eia.doe.gov/emeu/aer/petro.html>.
- <sup>10</sup> U.S. Department of Energy, Energy Information Administration. *Annual Energy Review 2005*, Table 7 [DOE/EIA-0384(2005)] (July 2006). Available at [http://www.eia.doe.gov/emeu/aer/pdf/pages/sec7\\_9.pdf](http://www.eia.doe.gov/emeu/aer/pdf/pages/sec7_9.pdf).
- <sup>11</sup> U.S. Department of Energy, Energy Information Administration. *Annual Energy Review 2005*, Table 8 [DOE/EIA-0384(2005)] (July 2006). Available at [http://www.eia.doe.gov/emeu/aer/pdf/pages/sec8\\_37.pdf](http://www.eia.doe.gov/emeu/aer/pdf/pages/sec8_37.pdf).
- <sup>12</sup> U.S. Department of Energy, Energy Information Administration. *Annual Energy Review 2005* [DOE/EIA-0384(2005)] (July 2006).
- <sup>13</sup> American Chemistry Council. *Guide to the Business of Chemistry 2002*. As originally referenced in U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Industrial Technologies Program. *Chemicals Industry of the Future: Fiscal Year 2004 Annual Report*.
- <sup>14</sup> U.S. Department of Energy, Energy Information Administration. *Annual Energy Review 2005* [DOE/EIA-0384(2005)] (July 2006).
- <sup>15</sup> U.S. Department of Energy, Energy Information Administration. *Manufacturing Energy Consumption Survey, 2002 Data Tables*, Table 3.2, Energy Consumption as a Fuel, and Table 6.1., Ratios of Manufacturing Fuel Consumption to Economic Characteristics. Available at <http://www.eia.doe.gov/emeu/mecs/mecs2002/data02/shelltables.html>.
- <sup>16</sup> U.S. Department of Energy, Energy Information Administration. *Manufacturing Energy Consumption Survey, 2002 Data Tables*, Table 3.2, Energy Consumption as a Fuel. Available at <http://www.eia.doe.gov/emeu/mecs/mecs2002/data02/shelltables.html>.
- <sup>17</sup> U.S. Department of Energy, Energy Information Administration. *Manufacturing Energy Consumption Survey, 2002 Data Tables*, Table 1.2, Consumption of Energy for All Purposes (First Use). Available at <http://www.eia.doe.gov/emeu/mecs/mecs2002/data02/shelltables.html>.
- <sup>18</sup> U.S. Department of Energy, Energy Efficiency and Renewable Energy, Industrial Technologies Program. *Energy Use, Loss, and Opportunities: Analysis: U.S. Manufacturing and Mining*. (December 2004). Available at [http://www.eere.energy.gov/industry/energy\\_systems/pdfs/energy\\_use\\_loss\\_opportunities\\_analysis.pdf](http://www.eere.energy.gov/industry/energy_systems/pdfs/energy_use_loss_opportunities_analysis.pdf).

## References

---

- <sup>19</sup> U.S. Department of Energy, Energy Efficiency and Renewable Energy, Industrial Technologies Program. *Energy Use, Loss, and Opportunities: Analysis: U.S. Manufacturing and Mining*. (December 2004). Available at [http://www.eere.energy.gov/industry/energy\\_systems/pdfs/energy\\_use\\_loss\\_opportunities\\_analysis.pdf](http://www.eere.energy.gov/industry/energy_systems/pdfs/energy_use_loss_opportunities_analysis.pdf).
- <sup>20</sup> Boyd, G.A. Argonne National Laboratory. *Development of a Performance-Based Industrial Energy Efficiency Indicator for the Cement Industry*. [ANL/DIS-06-3]. (July 2006). Available at <http://www.energystar.gov/ia/business/industry/ANL-DIS-06-3.pdf>.
- <sup>21</sup> U.S. Department of Energy, Energy Information Administration. *Manufacturing Fuel-Switching Capacity*. (August 2006). Available at [http://www.eia.doe.gov/emeu/mecs/special\\_topics/energy\\_use\\_manufacturing/energyuse98\\_02/fuel\\_switch.html](http://www.eia.doe.gov/emeu/mecs/special_topics/energy_use_manufacturing/energyuse98_02/fuel_switch.html).
- <sup>22</sup> U.S. Department of Energy, Energy Information Administration. *Manufacturing Energy Consumption Survey, 2002 Data Tables*, Table 10.2. Available at <http://www.eia.doe.gov/emeu/mecs/mecs2002/data02/shelltables.html>.
- <sup>23</sup> U.S. Department of Energy, Energy Information Administration. *Manufacturing Energy Consumption Survey, 2002 Data Tables*, Table 10.2. Available at <http://www.eia.doe.gov/emeu/mecs/mecs2002/data02/shelltables.html>.
- <sup>24</sup> Larry Kavanagh, American Iron & Steel Association. Personal communication, written comments on draft report.
- <sup>25</sup> U.S. Department of Energy, Energy Information Administration. *Manufacturing Energy Consumption Survey, 2002 Data Tables*, Table 6.1. Available at <http://www.eia.doe.gov/emeu/mecs/mecs2002/data02/shelltables.html>.
- <sup>26</sup> U.S. Census Bureau. *Statistics for Industry Groups and Industries: 2004. Annual Survey of Manufacturers*, Table 2 and Table 4. (December 2005.) Available at <http://www.census.gov/prod/2005pubs/am0431gs1.pdf>.
- <sup>27</sup> U.S. Department of Energy, Energy Efficiency and Renewable Energy Division, Industrial Technologies Program. *Understanding Energy Footprints*. Available at [http://www.eere.energy.gov/industry/energy\\_systems/pdfs/understanding\\_footprints.pdf](http://www.eere.energy.gov/industry/energy_systems/pdfs/understanding_footprints.pdf).
- <sup>28</sup> U.S. Department of Energy, Energy Efficiency and Renewable Energy Division, Industrial Technologies Program. *Energy Use and Loss Footprints, The Role of Energy Efficiency*. Available at [http://www.eere.energy.gov/industry/energy\\_systems/pdfs/role.pdf](http://www.eere.energy.gov/industry/energy_systems/pdfs/role.pdf).
- <sup>29</sup> U.S. Department of Energy, Energy Efficiency and Renewable Energy Division, Industrial Technologies Program. *Energy Use and Loss Footprints, Assumptions and Definitions*. Available at [http://www.eere.energy.gov/industry/energy\\_systems/pdfs/assumptions.pdf](http://www.eere.energy.gov/industry/energy_systems/pdfs/assumptions.pdf).
- <sup>30</sup> U.S. Department of Energy, Energy Efficiency and Renewable Energy Division, Industrial Technologies Program. *Energy Use and Loss Footprints, Assumptions and Definitions*. Available at [http://www.eere.energy.gov/industry/energy\\_systems/pdfs/assumptions.pdf](http://www.eere.energy.gov/industry/energy_systems/pdfs/assumptions.pdf).
- <sup>31</sup> U.S. Department of Energy, Energy Efficiency and Renewable Energy Division, Industrial Technologies Program. *Energy Use and Loss Footprints, Assumptions and Definitions*. Internet source. Available at [http://www.eere.energy.gov/industry/energy\\_systems/pdfs/assumptions.pdf](http://www.eere.energy.gov/industry/energy_systems/pdfs/assumptions.pdf).
- <sup>32</sup> U.S. Department of Energy, Energy Efficiency and Renewable Energy Division, Industrial Technologies Program. *Energy Use and Loss Footprints, The Role of Energy Efficiency*. Available at [http://www.eere.energy.gov/industry/energy\\_systems/pdfs/role.pdf](http://www.eere.energy.gov/industry/energy_systems/pdfs/role.pdf).
- <sup>33</sup> U.S. Department of Energy, Energy Efficiency and Renewable Energy Division, Industrial Technologies Program. *Energy Use and Loss Footprints*. Internet source. (Updated December 2004.) Available at [http://www.eere.energy.gov/industry/energy\\_systems/footprints.html](http://www.eere.energy.gov/industry/energy_systems/footprints.html).
- <sup>34</sup> U.S. Department of Energy, Energy Efficiency and Renewable Energy Division, Industrial Technologies Program. *Energy Use and Loss Footprints, The Role of Energy Efficiency*. Available at [http://www.eere.energy.gov/industry/energy\\_systems/pdfs/role.pdf](http://www.eere.energy.gov/industry/energy_systems/pdfs/role.pdf).
- <sup>35</sup> United States Combined Heat and Power Association. *CHP Basics*. Internet source. Available at <http://uschpa.admgt.com/CHPbasics.htm>.
- <sup>36</sup> U.S. Departments of Commerce and Transportation. *2002 Economic Census Commodity Flow Survey* [EC02TCF-US] (December 2004).

## References

---

- <sup>37</sup> U.S. Environmental Protection Agency. *The Plain English Guide to the Clean Air Act: The Common Air Pollutants*. Internet source. (Updated September 9, 2006.) Available at [http://www.epa.gov/oar/oaqps/peg\\_caa/pegcaa11.html](http://www.epa.gov/oar/oaqps/peg_caa/pegcaa11.html).
- <sup>38</sup> Australian Government, Department of Environment and Heritage. *Carbon Monoxide Fact Sheet*. Internet source. Available at <http://www.npi.gov.au/database/substance-info/profiles/19.html>.
- <sup>39</sup> National Academy of Sciences, National Research Council. *Interim Report of the Committee on Changes in New Source Review Programs for Stationary Sources of Air Pollutants* (2005).
- <sup>40</sup> U.S. Environmental Protection Agency, National Emissions Inventory 2002.
- <sup>41</sup> U.S. Environmental Protection Agency, National Emissions Inventory 2002.
- <sup>42</sup> U.S. Environmental Protection Agency, National Emissions Inventory 2002.
- <sup>43</sup> U.S. Department of Energy, Energy Information Administration. *Manufacturing Energy Consumption Survey, 2002 Data Tables*, Table 1.2. Available at <http://www.eia.doe.gov/emeu/mecs/mecs2002/data02/shelltables.html>.
- <sup>44</sup> U.S. Department of Energy, Energy Information Administration. *2002 Manufacturing Energy Consumption Survey*, Table 6.1. Available at <http://www.eia.doe.gov/emeu/mecs/mecs2002/data02/shelltables.html>.
- <sup>45</sup> U.S. Census Bureau. *Statistics for Industry Groups and Industries: 2004, Annual Survey of Manufacturers*, [M04(AS)-1] (December 2005). Available at <http://www.census.gov/prod/2005pubs/am0431gs1.pdf>.
- U.S. Census Bureau. *Statistics for Industry Groups and Industries: 2001, Annual Survey of Manufacturers*, [M01(AS)-1] (January 2003). Available at <http://www.census.gov/prod/2003pubs/m01as-1.pdf>.
- <sup>46</sup> Timothy Considine, Pennsylvania State University. *The Transformation of North American Steel Industry: Drivers, Prospects, and Vulnerabilities*. White paper prepared for the American Iron and Steel Institute. (April 2005).
- <sup>47</sup> U.S. Department of Energy, Energy Efficiency and Renewable Energy. *U.S. Energy Requirements for Aluminum Production: Historical Perspectives, Theoretical Limits and New Opportunities*. (January 2003). Available at [http://www.eere.energy.gov/industry/aluminum/pdfs/al\\_theoretical.pdf](http://www.eere.energy.gov/industry/aluminum/pdfs/al_theoretical.pdf).
- <sup>48</sup> *Seattle-Post Intelligencer*, "Aluminum smelters can compete if power is cheaper, study says." (Friday, March 14, 2003). Available at [http://seattlepi.nwsource.com/business/112424\\_smelter14.shtml](http://seattlepi.nwsource.com/business/112424_smelter14.shtml).
- <sup>49</sup> U.S. Census Bureau. *Statistics for Industry Groups and Industries: 2004, Annual Survey of Manufacturers*, Table 2 and Table 4. (December 2005.) Available at <http://www.census.gov/prod/2005pubs/am0431gs1.pdf>.
- <sup>50</sup> U.S. Department of Energy, Energy Efficiency and Renewable Energy. *U.S. Energy Requirements for Aluminum Production: Historical Perspectives, Theoretical Limits and New Opportunities*. (January 2003). Available at [http://www.eere.energy.gov/industry/aluminum/pdfs/al\\_theoretical.pdf](http://www.eere.energy.gov/industry/aluminum/pdfs/al_theoretical.pdf).
- <sup>51</sup> Interlaboratory Working Group, Oak Ridge National Laboratory and Lawrence Berkeley National Laboratory. *Scenarios for a Clean Energy Future*. [ORNL/CON-476 and LBNL-44029]. (November 2000). Available at <http://www.ornl.gov/sci/eere/cefl/>.
- <sup>52</sup> U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy. *U.S. Energy Requirements for Aluminum Production: Historical Perspectives, Theoretical Limits and New Opportunities*. (January 2003). Available at [http://www.eere.energy.gov/industry/aluminum/pdfs/al\\_theoretical.pdf](http://www.eere.energy.gov/industry/aluminum/pdfs/al_theoretical.pdf).
- <sup>53</sup> The Aluminum Association, Inc. *Energy Policy Position*. (2004). Internet source. Available at [http://www.aluminum.org/Content/NavigationMenu/The\\_Industry/Government\\_Policy/Energy/Energy.htm](http://www.aluminum.org/Content/NavigationMenu/The_Industry/Government_Policy/Energy/Energy.htm).
- <sup>54</sup> Interlaboratory Working Group, Oak Ridge National Laboratory and Lawrence Berkeley National Laboratory. *Scenarios for a Clean Energy Future*. [ORNL/CON-476 and LBNL-44029]. (November 2000). Available at <http://www.ornl.gov/sci/eere/cefl/>.
- <sup>55</sup> U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Industrial Technologies Program. *Aluminum Industry of the Future*. (November 1998). Available at <http://www.p2pays.org/ref/08/07448.pdf>.
- <sup>56</sup> Elliott, Shipley, Brown. *CHP Five Years Later: Federal and State Policies and Programs Update*. [Report Number IE031.] (January 2003).

## References

---

- <sup>57</sup> Interlaboratory Working Group, Oak Ridge National Laboratory and Lawrence Berkeley National Laboratory. *Scenarios for a Clean Energy Future*. [ORNL/CON-476 and LBNL-44029]. (November 2000). Available at <http://www.ornl.gov/sci/eere/cefl>.
- <sup>58</sup> U.S. Environmental Protection Agency. *Voluntary Aluminum Industrial Partnership*. Internet source. (Updated March 8, 2006). Available at <http://www.epa.gov/highwpl/aluminum-pfc/resources.html>.
- <sup>59</sup> U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy. *U.S. Energy Requirements for Aluminum Production: Historical Perspectives, Theoretical Limits and New Opportunities*. (January 2003). Available at [http://www.eere.energy.gov/industry/aluminum/pdfs/al\\_theoretical.pdf](http://www.eere.energy.gov/industry/aluminum/pdfs/al_theoretical.pdf).
- <sup>60</sup> U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy. *U.S. Energy Requirements for Aluminum Production: Historical Perspectives, Theoretical Limits and New Opportunities*. (January 2003). Available at [http://www.eere.energy.gov/industry/aluminum/pdfs/al\\_theoretical.pdf](http://www.eere.energy.gov/industry/aluminum/pdfs/al_theoretical.pdf).
- <sup>61</sup> Portland Cement Association. *U.S. and Canadian Labor-Energy Input Survey*. (2000).
- <sup>62</sup> U.S. Department of Energy, Industrial Technologies Program. *Energy and Emission Reduction Opportunities for the Cement Industry*. (December 2003). Analysis prepared by BCS Incorporated. Available at [http://www.eere.energy.gov/industry/imf/pdfs/eeroci\\_dec03a.pdf](http://www.eere.energy.gov/industry/imf/pdfs/eeroci_dec03a.pdf).
- <sup>63</sup> Portland Cement Association. *U.S. and Canadian Portland Cement Industry: Plant Information Summary*. (2005).
- <sup>64</sup> Portland Cement Association. *Report on Sustainable Manufacturing*. Internet source. (2006). Available at [http://www.cement.org/smreport06/sec\\_page1\\_2.htm](http://www.cement.org/smreport06/sec_page1_2.htm).
- <sup>65</sup> U.S. Geological Survey. *Mineral Commodity Summaries 2006*. (January 2006). Available at <http://minerals.er.usgs.gov/minerals/pubs/mcs/2006/mcs2006.pdf>.
- <sup>66</sup> U.S. Geological Survey. *Mineral Commodity Summaries 2005*. (January 2005). As originally cited in U.S. Environmental Protection Agency, Sector Strategies Program, *Sector Strategies Performance Report*. (2006).
- <sup>67</sup> Portland Cement Association. *Cement Consumption Growth Continues: PCA Summer Forecast Revises 2006 Growth Targets*. Press Release. (August 9, 2006). Available at [http://www.cement.org/newsroom/Summer\\_Forecast\\_08042006.asp](http://www.cement.org/newsroom/Summer_Forecast_08042006.asp).
- <sup>68</sup> Portland Cement Association. *Cement Consumption Growth Continues: PCA Summer Forecast Revises 2006 Growth Targets*. Press Release. (August 9, 2006). Available at [http://www.cement.org/newsroom/Summer\\_Forecast\\_08042006.asp](http://www.cement.org/newsroom/Summer_Forecast_08042006.asp).
- <sup>69</sup> U.S. Geological Survey. *Cement Mineral Yearbook 2004*, prepared by Hendrick G. Van Oss. As originally cited in U.S. Environmental Protection Agency, Sector Strategies Program, *Sector Strategies Performance Report*. (2006).
- <sup>70</sup> U.S. Department of Energy, Energy Information Administration, *Manufacturing Energy Consumption Survey, 2002*.  
U.S. Department of Energy, Energy Information Administration, *Manufacturing Energy Consumption Survey, 1998*.
- <sup>71</sup> Portland Cement Association. *U.S. and Canadian Portland Cement Industry: Plant Information Summary*. (2005).
- <sup>72</sup> U.S. Geological Survey. *Mineral Commodity Summaries 2006*. (January 2006). Available at <http://minerals.er.usgs.gov/minerals/pubs/mcs/2006/mcs2006.pdf>.
- <sup>73</sup> U.S. Geological Survey. *Cement Mineral Yearbook 2004* and personal correspondence, Carl Koch (U.S. EPA) with Hendrick G. van Oss (USGS), (February 2006). As originally cited in U.S. Environmental Protection Agency, Sector Strategies Program, *Sector Strategies Performance Report*. (2006).
- <sup>74</sup> Interlaboratory Working Group, Oak Ridge National Laboratory and Lawrence Berkeley National Laboratory. *Scenarios for a Clean Energy Future*. [ORNL/CON-476 and LBNL-44029]. (November 2000). Available at <http://www.ornl.gov/sci/eere/cefl>.
- <sup>75</sup> U.S. Environmental Protection Agency. *Cement Manufacturing Focus*. Internet source. Available at [http://www.energystar.gov/index.cfm?c=in\\_focus.bus\\_cement\\_manuf\\_focus](http://www.energystar.gov/index.cfm?c=in_focus.bus_cement_manuf_focus).
- <sup>76</sup> U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Industrial Technologies Program. *Energy Use, Loss, and Opportunities Analysis: U.S. Manufacturing and Mining*. (December 2004). Prepared by Energetics, Inc. and E3M, Incorporated. Available at [http://www.eere.energy.gov/industry/energy\\_systems/pdfs/energy\\_use\\_loss\\_opportunities\\_analysis.pdf](http://www.eere.energy.gov/industry/energy_systems/pdfs/energy_use_loss_opportunities_analysis.pdf).

## References

---

- <sup>77</sup> U.S. Department of Energy, Industrial Technologies Program. *Energy and Emission Reduction Opportunities for the Cement Industry*. (December 2003). Analysis prepared by BCS Incorporated. Available at [http://www.eere.energy.gov/industry/imf/pdfs/eeroci\\_dec03a.pdf](http://www.eere.energy.gov/industry/imf/pdfs/eeroci_dec03a.pdf).
- <sup>78</sup> U.S. Department of Energy, Industrial Technologies Program. *Energy and Emission Reduction Opportunities for the Cement Industry*. (December 2003). Analysis prepared by BCS Incorporated. Available at [http://www.eere.energy.gov/industry/imf/pdfs/eeroci\\_dec03a.pdf](http://www.eere.energy.gov/industry/imf/pdfs/eeroci_dec03a.pdf).
- <sup>79</sup> U.S. Department of Energy, Industrial Technologies Program. *Energy and Emission Reduction Opportunities for the Cement Industry*. (December 2003). Analysis prepared by BCS Incorporated. Available at [http://www.eere.energy.gov/industry/imf/pdfs/eeroci\\_dec03a.pdf](http://www.eere.energy.gov/industry/imf/pdfs/eeroci_dec03a.pdf).
- <sup>80</sup> U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Industrial Technologies Program. *Energy Use, Loss, and Opportunities Analysis: U.S. Manufacturing and Mining*. (December 2004). Prepared by Energetics, Inc. and E3M, Incorporated. Available at [http://www.eere.energy.gov/industry/energy\\_systems/pdfs/energy\\_use\\_loss\\_opportunities\\_analysis.pdf](http://www.eere.energy.gov/industry/energy_systems/pdfs/energy_use_loss_opportunities_analysis.pdf).
- <sup>81</sup> Holderbank Consulting. *Present and Future Energy Use of Energy in the Cement and Concrete Industries in Canada*. (1993).
- <sup>82</sup> Worrell, Ernst; Galitsky, Christina. *Energy Efficiency Improvement Opportunities for Cement Making*. (January 2004).
- <sup>83</sup> U.S. Department of Energy, Industrial Technologies Program. *Energy and Emission Reduction Opportunities for the Cement Industry*. (December 2003). Analysis prepared by BCS Incorporated. Available at [http://www.eere.energy.gov/industry/imf/pdfs/eeroci\\_dec03a.pdf](http://www.eere.energy.gov/industry/imf/pdfs/eeroci_dec03a.pdf).
- <sup>84</sup> Interlaboratory Working Group, Oak Ridge National Laboratory and Lawrence Berkeley National Laboratory. *Scenarios for a Clean Energy Future*. [ORNL/CON-476 and LBNL-44029]. (November 2000). Available at <http://www.ornl.gov/sci/eere/cefl>.
- <sup>85</sup> U.S. Environmental Protection Agency. *Beneficial Use of Industrial By-Products in Cement Kilns: Analysis of Utilization Trends and Regulatory Requirements*. Draft report. (April 21, 2005).
- <sup>86</sup> U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Industrial Technologies Program. *Energy Use, Loss, and Opportunities Analysis: U.S. Manufacturing and Mining*. (December 2004). Prepared by Energetics, Inc. and E3M, Incorporated. Available at [http://www.eere.energy.gov/industry/energy\\_systems/pdfs/energy\\_use\\_loss\\_opportunities\\_analysis.pdf](http://www.eere.energy.gov/industry/energy_systems/pdfs/energy_use_loss_opportunities_analysis.pdf).
- <sup>87</sup> U.S. Department of Energy, Industrial Technologies Program. *Energy and Emission Reduction Opportunities for the Cement Industry*. (December 2003). Analysis prepared by BCS Incorporated. Available at [http://www.eere.energy.gov/industry/imf/pdfs/eeroci\\_dec03a.pdf](http://www.eere.energy.gov/industry/imf/pdfs/eeroci_dec03a.pdf).
- <sup>88</sup> U.S. Department of Energy, Energy Information Administration. *Manufacturing Energy Consumption Survey, 2002 Data Tables*, Table 1.2, Consumption of Energy for All Purposes (First Use) and Table 6.1., Ratios of Manufacturing Fuel Consumption to Economic Characteristics. Available at <http://www.eia.doe.gov/emeu/mecs/mecs2002/data02/shelltables.html>.
- <sup>89</sup> American Chemistry Council. *Guide to the Business of Chemistry 2002*. As originally referenced in U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Industrial Technologies Program. *Chemicals Industry of the Future: Fiscal Year 2004 Annual Report*.
- <sup>90</sup> U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Industrial Technologies Program. *Chemicals Industry of the Future: Fiscal Year 2004 Annual Report*. Available at [http://www1.eere.energy.gov/industry/about/pdfs/chemicals\\_fy2004.pdf](http://www1.eere.energy.gov/industry/about/pdfs/chemicals_fy2004.pdf).
- <sup>91</sup> Gerard, Jack. *Testimony Before the Subcommittee on Energy & Mineral Resources, United States House of Representatives, Legislative Hearing on the Outer Continental Shelf Natural Gas Relief Act*. Internet source. (Accessed March 1, 2006). Available at [http://www.americanchemistry.com/s\\_acc/bin.asp?CID=311&DID=1773&DOC=FILE.PDF](http://www.americanchemistry.com/s_acc/bin.asp?CID=311&DID=1773&DOC=FILE.PDF).
- <sup>92</sup> U.S. Department of Energy, Energy Information Administration, *Manufacturing Energy Consumption Survey, 2002*, Table 5.2, Energy Consumed as a Fuel by End Use. Available at <http://www.eia.doe.gov/emeu/mecs/mecs2002/data02/shelltables.html>.
- <sup>93</sup> U.S. Department of Energy, Energy Information Administration, *Manufacturing Energy Consumption Survey, 2002*, Table 3.1, Energy Consumption as a Fuel (physical units) and Table 11.3, Components of Onsite Generation of Electricity. Available at <http://www.eia.doe.gov/emeu/mecs/mecs2002/data02/shelltables.html>.

## References

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- <sup>94</sup> Martin, N., Worrell, E., Price, Ruth, et. al. Ernest Orlando Lawrence Berkeley National Laboratory. *Emerging Energy-Efficient Industrial Technologies*. [LBNL46990.] (October 2000). Available at <http://ies.lbl.gov/iespubs/46990.pdf>.
- <sup>95</sup> U.S. Department of Energy, Energy Information Administration. *Manufacturing Energy Consumption Survey, 1994, 1998 and 2002*.
- <sup>96</sup> U.S. Department of Energy, Energy Information Administration, *Manufacturing Energy Consumption Survey, 1998 and 2002*.
- <sup>97</sup> American Gas Foundation. *Natural Gas Outlook to 2020*. (February 2005). Available at <http://www.gasfoundation.org/ResearchStudies/2020.htm>.
- <sup>98</sup> American Gas Foundation. *Natural Gas Outlook to 2020*. (February 2005). Available at <http://www.gasfoundation.org/ResearchStudies/2020.htm>.
- <sup>99</sup> U.S. Department of Energy, Energy Information Administration. *Manufacturing Energy Consumption Survey, 2002*, Table 3.2, Energy Consumption as a Fuel. Available at <http://www.eia.doe.gov/emeu/mecs/mecs2002/data02/shelltables.html>.  
U.S. Department of Energy, Energy Information Administration, *Manufacturing Energy Consumption Survey, 1998*, Table 3.2, Energy Consumption as a Fuel. Available at <http://www.eia.doe.gov/emeu/mecs/mecs2002/data02/shelltables.html>.
- <sup>100</sup> U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Industrial Technologies Program. *Energy Use, Loss, and Opportunities Analysis: U.S. Manufacturing and Mining*. (December 2004). Prepared by Energetics, Inc. and E3M, Incorporated. Available at [http://www.eere.energy.gov/industry/energy\\_systems/pdfs/energy\\_use\\_loss\\_opportunities\\_analysis.pdf](http://www.eere.energy.gov/industry/energy_systems/pdfs/energy_use_loss_opportunities_analysis.pdf).
- <sup>101</sup> U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Industrial Technologies Program. *Energy Use, Loss, and Opportunities Analysis: U.S. Manufacturing and Mining*. (December 2004). Prepared by Energetics, Inc. and E3M, Incorporated. Available at [http://www.eere.energy.gov/industry/energy\\_systems/pdfs/energy\\_use\\_loss\\_opportunities\\_analysis.pdf](http://www.eere.energy.gov/industry/energy_systems/pdfs/energy_use_loss_opportunities_analysis.pdf).
- <sup>102</sup> Elliott, Shipley, Brown. *CHP Five Years Later: Federal and State Policies and Programs Update*. [Report Number IE031.] (January 2003).
- <sup>103</sup> U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Industrial Technologies Program. *Chemicals Industry of the Future: Fiscal Year 2004 Annual Report*. Available at [http://www1.eere.energy.gov/industry/about/pdfs/chemicals\\_fy2004.pdf](http://www1.eere.energy.gov/industry/about/pdfs/chemicals_fy2004.pdf).
- <sup>104</sup> American Council for an Energy-Efficient Economy. *The Integrated Approach: Case Studies*. Internet source. Available at <http://aceee.org/p2/p2cases.htm#sandia>.
- <sup>105</sup> U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy. *Separation of Olefin/Paraffin Mixtures With Carrier-Facilitated Transport Membranes*. (2006). Available at [http://www.eere.energy.gov/industry/chemicals/pdfs/olefin\\_mixtures.pdf](http://www.eere.energy.gov/industry/chemicals/pdfs/olefin_mixtures.pdf).
- <sup>106</sup> U.S. Department of Energy, Energy Information Administration, *Manufacturing Energy Consumption Survey, 2002*, Table 5.2, Energy Consumed as a Fuel by End Use. Available at <http://www.eia.doe.gov/emeu/mecs/mecs2002/data02/shelltables.html>.
- <sup>107</sup> U.S. Census Bureau. *County Business Patterns, CenStats Databases*. (Accessed September 13, 2006.) Available at <http://censtats.census.gov/cbpnaic/cbpnaic.shtml>.
- <sup>108</sup> American Gas Foundation. *Natural Gas Outlook to 2020*. (February 2005). Available at <http://www.gasfoundation.org/ResearchStudies/2020.htm>.
- <sup>109</sup> U.S. Department of Energy, Energy Information Administration. *Manufacturing Energy Consumption Survey, 2002 Data Tables*, Table 1.2, Consumption of Energy for All Purposes (First Use). Available at <http://www.eia.doe.gov/emeu/mecs/mecs2002/data02/shelltables.html>.
- <sup>110</sup> U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Industrial Technologies Program. *Energy Use, Loss, and Opportunities Analysis: U.S. Manufacturing and Mining*. (December 2004). Prepared by Energetics, Inc. and E3M, Incorporated. Available at [http://www.eere.energy.gov/industry/energy\\_systems/pdfs/energy\\_use\\_loss\\_opportunities\\_analysis.pdf](http://www.eere.energy.gov/industry/energy_systems/pdfs/energy_use_loss_opportunities_analysis.pdf).

## References

---

- <sup>111</sup> U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Industrial Technologies Program. *Energy Use, Loss, and Opportunities Analysis: U.S. Manufacturing and Mining*. (December 2004). Prepared by Energetics, Inc. and E3M, Incorporated. Available at [http://www.eere.energy.gov/industry/energy\\_systems/pdfs/energy\\_use\\_loss\\_opportunities\\_analysis.pdf](http://www.eere.energy.gov/industry/energy_systems/pdfs/energy_use_loss_opportunities_analysis.pdf).
- <sup>112</sup> U.S. Departments of Commerce and Transportation. *2002 Economic Census Commodity Flow Survey* [EC02TCF-US] (December 2004).
- <sup>113</sup> U.S. Department of Energy, Energy Information Administration. *Manufacturing Energy Consumption Survey, 2002*.  
U.S. Department of Energy, Energy Information Administration. *Manufacturing Energy Consumption Survey, 1998*.
- <sup>114</sup> American Gas Foundation. *Natural Gas Outlook to 2020*. (February 2005). Available at <http://www.gasfoundation.org/ResearchStudies/2020.htm>.
- <sup>115</sup> American Gas Foundation. *Natural Gas Outlook to 2020*. (February 2005). Available at <http://www.gasfoundation.org/ResearchStudies/2020.htm>.
- <sup>116</sup> U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Industrial Technologies Program. *Energy Use, Loss, and Opportunities Analysis: U.S. Manufacturing and Mining*. (December 2004). Prepared by Energetics, Inc. and E3M, Incorporated. Available at [http://www.eere.energy.gov/industry/energy\\_systems/pdfs/energy\\_use\\_loss\\_opportunities\\_analysis.pdf](http://www.eere.energy.gov/industry/energy_systems/pdfs/energy_use_loss_opportunities_analysis.pdf).
- <sup>117</sup> U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Industrial Technologies Program. *Energy Use, Loss, and Opportunities Analysis: U.S. Manufacturing and Mining*. (December 2004). Prepared by Energetics, Inc. and E3M, Incorporated. Available at [http://www.eere.energy.gov/industry/energy\\_systems/pdfs/energy\\_use\\_loss\\_opportunities\\_analysis.pdf](http://www.eere.energy.gov/industry/energy_systems/pdfs/energy_use_loss_opportunities_analysis.pdf).
- <sup>118</sup> Elliott, Shipley, Brown. *CHP Five Years Later: Federal and State Policies and Programs Update*. [Report Number IE031.] (January 2003).
- <sup>119</sup> U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Industrial Technologies Program. *Energy Use, Loss, and Opportunities Analysis: U.S. Manufacturing and Mining*. (December 2004). Prepared by Energetics, Inc. and E3M, Incorporated. Available at [http://www.eere.energy.gov/industry/energy\\_systems/pdfs/energy\\_use\\_loss\\_opportunities\\_analysis.pdf](http://www.eere.energy.gov/industry/energy_systems/pdfs/energy_use_loss_opportunities_analysis.pdf).
- <sup>120</sup> E. Worrell, L. Price, C. Galitsky, Lawrence Berkeley National Laboratory. *Emerging Energy-Efficient Technologies in Industry: Case Studies of Selected Technologies*. (May 2004). [LBNL-54828]. Analysis prepared on behalf of the National Commission on Energy Policy, through the U.S. Department of Energy. Available at <http://www.energycommission.org/files/finalReport/III.6.a%20-%20EE%20Technol%20in%20Industry%20.pdf>.
- <sup>121</sup> U.S. Department of Energy. *Forest Products Industry of the Future: Fiscal Year 2004 Annual Report*. (February 2005).
- <sup>122</sup> U.S. Department of Energy. *Forest Products Industry Analysis Brief*. Available at [http://www.eia.doe.gov/emeu/mecs/iab/forest\\_products/](http://www.eia.doe.gov/emeu/mecs/iab/forest_products/). As originally cited in U.S. Environmental Protection Agency, Sector Strategies Program, *Sector Strategies Performance Report*. (2006).
- <sup>123</sup> U.S. Department of Energy. *Forest Products Industry of the Future: Fiscal Year 2004 Annual Report*. (February 2005). As originally cited in U.S. Environmental Protection Agency, Sector Strategies Program, *Sector Strategies Performance Report*. (2006).
- <sup>124</sup> U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Industrial Technologies Program. *Energy Use, Loss, and Opportunities Analysis: U.S. Manufacturing and Mining*. (December 2004). Prepared by Energetics, Inc. and E3M, Incorporated. Available at [http://www.eere.energy.gov/industry/energy\\_systems/pdfs/energy\\_use\\_loss\\_opportunities\\_analysis.pdf](http://www.eere.energy.gov/industry/energy_systems/pdfs/energy_use_loss_opportunities_analysis.pdf).
- <sup>125</sup> American Forest & Paper Association. *AF&PA Environmental, Health and Safety Verification Program: Year 2002 Report*. (May 2004). Available at [http://www.afandpa.org/Content/NavigationMenu/Environment\\_and\\_Recycling/Environment,\\_Health\\_and\\_Safety/Reports/2002EHSReport.pdf](http://www.afandpa.org/Content/NavigationMenu/Environment_and_Recycling/Environment,_Health_and_Safety/Reports/2002EHSReport.pdf).

## References

---

- <sup>126</sup> U.S. Department of Energy. *Forest Products Industry of the Future: Fiscal Year 2004 Annual Report*. (February 2005). As originally cited in U.S. Environmental Protection Agency, Sector Strategies Program, *Sector Strategies Performance Report*. (2006).
- <sup>127</sup> American Forest & Paper Association. *AF&PA Environmental, Health and Safety Verification Program: Year 2002 Report*. (May 2004). Available at [http://www.afandpa.org/Content/NavigationMenu/Environment\\_and\\_Recycling/Environment,\\_Health\\_and\\_Safety/Reports/2002EHSReport.pdf](http://www.afandpa.org/Content/NavigationMenu/Environment_and_Recycling/Environment,_Health_and_Safety/Reports/2002EHSReport.pdf).
- <sup>128</sup> U.S. Department of Energy. *Forest Products Industry of the Future: Fiscal Year 2004 Annual Report*. (February 2005).
- <sup>129</sup> U.S. Department of Energy. *Forest Products Industry of the Future: Fiscal Year 2004 Annual Report*. (February 2005). As originally cited in U.S. Environmental Protection Agency, Sector Strategies Program, *Sector Strategies Performance Report*. (2006).
- <sup>130</sup> U.S. Department of Energy. *Forest Products Industry of the Future: Fiscal Year 2004 Annual Report*. (February 2005).
- <sup>131</sup> American Gas Foundation. *Natural Gas Outlook to 2020*. (February 2005). Available at <http://www.gasfoundation.org/ResearchStudies/2020.htm>.
- <sup>132</sup> U.S. Department of Energy, Energy Information Administration, *Manufacturing Energy Consumption Survey, 2002*, Table 3.2, Energy Consumption as a Fuel. Available at <http://www.eia.doe.gov/emeu/mecs/mecs2002/data02/shelltables.html>.
- <sup>133</sup> U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Industrial Technologies Program. *Energy Use, Loss, and Opportunities Analysis: U.S. Manufacturing and Mining*. (December 2004). Prepared by Energetics, Inc. and E3M, Incorporated. Available at [http://www.eere.energy.gov/industry/energy\\_systems/pdfs/energy\\_use\\_loss\\_opportunities\\_analysis.pdf](http://www.eere.energy.gov/industry/energy_systems/pdfs/energy_use_loss_opportunities_analysis.pdf).
- <sup>134</sup> U.S. Department of Energy. *Forest Products Industry of the Future: Fiscal Year 2004 Annual Report*. (February 2005).
- <sup>135</sup> U.S. Department of Energy, Energy Information Administration. *Manufacturing Energy Consumption Survey, 1998 and 2002*.
- <sup>136</sup> American Forest & Paper Association representatives who provided feedback on a previous draft of this report (dated September 21, 2006) included Jerry Schwartz, Stan Lancey, Sundar Mahadevan, Tim Hunt, and Laurie Holmes. Personal communication (December 8, 2006).
- <sup>137</sup> U.S. Department of Energy, Energy Efficiency and Renewable Energy, Industrial Technologies Program. *Pulp and Paper Industry, Energy Bandwidth Study*. [Project number 16CX8700]. (August 2006). Analysis prepared by Jacobs Engineering Group and the Institute of Paper Science & Technology, with project management provided by the American Institute of Chemical Engineers.
- <sup>138</sup> U.S. Department of Energy. *Forest Products Industry of the Future: Fiscal Year 2004 Annual Report*. (February 2005).
- <sup>139</sup> American Forest & Paper Association representatives who provided feedback on a previous draft of this report (dated September 21, 2006) included Jerry Schwartz, Stan Lancey, Sundar Mahadevan, Tim Hunt, and Laurie Holmes. Personal communication (December 8, 2006).
- <sup>140</sup> American Forest & Paper Association representatives who provided feedback on a previous draft of this report (dated September 21, 2006) included Jerry Schwartz, Stan Lancey, Sundar Mahadevan, Tim Hunt, and Laurie Holmes. Personal communication (December 8, 2006).
- <sup>141</sup> U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Industrial Technologies Program. *Energy Use, Loss, and Opportunities Analysis: U.S. Manufacturing and Mining*. (December 2004). Prepared by Energetics, Inc. and E3M, Incorporated. Available at [http://www.eere.energy.gov/industry/energy\\_systems/pdfs/energy\\_use\\_loss\\_opportunities\\_analysis.pdf](http://www.eere.energy.gov/industry/energy_systems/pdfs/energy_use_loss_opportunities_analysis.pdf).
- <sup>142</sup> American Forest & Paper Association representatives who provided feedback on a previous draft of this report (dated September 21, 2006) included Jerry Schwartz, Stan Lancey, Sundar Mahadevan, Tim Hunt, and Laurie Holmes. Personal communication (December 8, 2006).

## References

---

- World Business Council for Sustainable Development. *The Sustainable Wood products Industry, Carbon, and Climate Change*. Geneva, Switzerland. (2005). Internet source. (Accessed January 29, 2006.) Available at <http://www.wbcsd.org/web/publications/sfpi-cop11.pdf>.
- <sup>143</sup> U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Industrial Technologies Program. *Energy Use, Loss, and Opportunities Analysis: U.S. Manufacturing and Mining*. (December 2004). Analysis prepared by Energetics, Inc. and E3M, Incorporated. Available at [http://www.eere.energy.gov/industry/energy\\_systems/pdfs/energy\\_use\\_loss\\_opportunities\\_analysis.pdf](http://www.eere.energy.gov/industry/energy_systems/pdfs/energy_use_loss_opportunities_analysis.pdf).
- <sup>144</sup> U.S. Department of Energy, Energy Efficiency and Renewable Energy, Industrial Technologies Program. *Pulp and Paper Industry, Energy Bandwidth Study*. [Project number 16CX8700]. (August 2006). Analysis prepared by Jacobs Engineering Group and the Institute of Paper Science & Technology, with project management provided by the American Institute of Chemical Engineers.
- <sup>145</sup> Drew Ronneberg, U.S. Department of Energy, Energy Efficiency and Renewable Energy, Industrial Technologies Program. Personal communication with Paula VanLare, U.S. Environmental Protection Agency. (December 4, 2006).
- <sup>146</sup> Drew Ronneberg, U.S. Department of Energy, Energy Efficiency and Renewable Energy, Industrial Technologies Program. Personal communication with Paula VanLare, U.S. Environmental Protection Agency. (December 4, 2006).
- <sup>147</sup> Kelliher, J. T., Federal Energy Regulatory Commission (FERC). *Chairman Joseph T. Kelliher's statement on new PURPA section 210(m) regulations applicable to small power production and cogeneration facilities*. Internet source. (October 19, 2006). Available at <http://www.ferc.gov/press-room/statements-speeches/kelliher/2006/10-19-06-kelliher-E-2.asp>.
- <sup>148</sup> American Forest & Paper Association representatives who provided feedback on a previous draft of this report (dated September 21, 2006) included Jerry Schwartz, Stan Lancey, Sundar Mahadevan, Tim Hunt, and Laurie Holmes. Personal communication (December 8, 2006).
- <sup>149</sup> Elliott, Shipley, Brown. *CHP Five Years Later: Federal and State Policies and Programs Update*. [Report Number IE031.] (January 2003).
- <sup>150</sup> Drew Ronneberg, U.S. Department of Energy, Energy Efficiency and Renewable Energy, Industrial Technologies Program. Personal communication with Paula VanLare, U.S. Environmental Protection Agency. (December 4, 2006).
- <sup>151</sup> U.S. Department of Energy, Office of Industrial Technologies. *Forest Products Project Fact Sheet: Combined Cycle Biomass Gasification*. (1999). Available at [http://www.eere.energy.gov/industry/forest/pdfs/biomass\\_gasification.pdf](http://www.eere.energy.gov/industry/forest/pdfs/biomass_gasification.pdf).
- <sup>152</sup> American Forest & Paper Association representatives who provided feedback on a previous draft of this report (dated September 21, 2006) included Jerry Schwartz, Stan Lancey, Sundar Mahadevan, Tim Hunt, and Laurie Holmes. Personal communication (December 8, 2006).
- <sup>153</sup> American Forest & Paper Association representatives who provided feedback on a previous draft of this report (dated September 21, 2006) included Jerry Schwartz, Stan Lancey, Sundar Mahadevan, Tim Hunt, and Laurie Holmes. Personal communication (December 8, 2006).
- <sup>154</sup> U.S. Department of Energy, Energy Efficiency and Renewable Energy, Industrial Technologies Program. *Pulp and Paper Industry, Energy Bandwidth Study*. [Project number 16CX8700]. (August 2006). Analysis prepared by Jacobs Engineering Group and the Institute of Paper Science & Technology, with project management provided by the American Institute of Chemical Engineers.
- <sup>155</sup> U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Industrial Technologies Program. *Energy Use, Loss, and Opportunities Analysis: U.S. Manufacturing and Mining*. (December 2004). Prepared by Energetics, Inc. and E3M, Incorporated. Available at [http://www.eere.energy.gov/industry/energy\\_systems/pdfs/energy\\_use\\_loss\\_opportunities\\_analysis.pdf](http://www.eere.energy.gov/industry/energy_systems/pdfs/energy_use_loss_opportunities_analysis.pdf).
- <sup>156</sup> Drew Ronneberg, U.S. Department of Energy, Energy Efficiency and Renewable Energy, Industrial Technologies Program. Personal communication with Paula VanLare, U.S. Environmental Protection Agency. (December 4, 2006).
- <sup>157</sup> American Forest & Paper Association representatives who provided feedback on a previous draft of this report (dated September 21, 2006) included Jerry Schwartz, Stan Lancey, Sundar Mahadevan, Tim Hunt, and Laurie Holmes. Personal communication (December 8, 2006).

## References

---

- <sup>158</sup> U.S. Department of Energy, Energy Efficiency and Renewable Energy, Industrial Technologies Program. *Pulp and Paper Industry, Energy Bandwidth Study*. [Project number 16CX8700]. (August 2006). Analysis prepared by Jacobs Engineering Group and the Institute of Paper Science & Technology, with project management provided by the American Institute of Chemical Engineers.
- <sup>159</sup> Jerry Schwartz, American Forest & Paper Association. Personal communication with Paula VanLare, U.S. Environmental Protection Agency, (December 4, 2006).
- <sup>160</sup> Jerry Schwartz, American Forest & Paper Association. Personal communication with Paula VanLare, U.S. Environmental Protection Agency (December 4, 2006).
- <sup>161</sup> U.S. Geological Survey. *Mineral Commodity Summaries: Iron and Steel*. (January 2006). Available at [http://minerals.usgs.gov/minerals/pubs/commodity/iron\\_&\\_steel/festemcs06.pdf](http://minerals.usgs.gov/minerals/pubs/commodity/iron_&_steel/festemcs06.pdf).
- <sup>162</sup> U.S. Geological Survey. *Mineral Commodity Summaries: Iron and Steel*. (January 2006). Available at [http://minerals.usgs.gov/minerals/pubs/commodity/iron\\_&\\_steel/festemcs06.pdf](http://minerals.usgs.gov/minerals/pubs/commodity/iron_&_steel/festemcs06.pdf).
- <sup>163</sup> Considine, T., Jablonowski, T. and Considine, D. *The Environment and New Technology Adoption in the U.S. Steel Industry*. (May 2001). Final report to the National Science Foundation and Lucent Technologies, Industrial Ecology Research Fellowship. [BES-9727297]. Available at <http://www.personal.psu.edu/faculty/c/p/cpw/resume/NSFFinalReportBES9727297.pdf>.
- <sup>164</sup> U.S. Geological Survey. *Mineral Commodity Summaries: Iron and Steel*. (January 2006). Available at [http://minerals.usgs.gov/minerals/pubs/commodity/iron\\_&\\_steel/festemcs06.pdf](http://minerals.usgs.gov/minerals/pubs/commodity/iron_&_steel/festemcs06.pdf).
- <sup>165</sup> Larry Kavanaugh, American Iron & Steel Institute (AISI). Personal communication (January 29, 2007).
- <sup>166</sup> Larry Kavanaugh, American Iron & Steel Institute (AISI). Personal communication (January 29, 2007).
- <sup>167</sup> U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Industrial Technologies Program. *Steel Industry Marginal Opportunity Study*. (September 2005). Analysis prepared by Energetics, Inc.
- <sup>168</sup> U.S. Department of Energy, Energy Information Administration. *Manufacturing Energy Consumption Survey, 2002 Data Tables*, Table 1.2, Consumption of Energy for All Purposes (First Use). Available at <http://www.eia.doe.gov/emeu/mecs/mecs2002/data02/shelltables.html>.
- <sup>169</sup> U.S. Department of Energy. *Steel Industry of the Future: Fiscal Year 2004 Report*. (February 2005). As originally cited in U.S. Environmental Protection Agency, Sector Strategies Program, *Sector Strategies Performance Report*. (2006).
- <sup>170</sup> Timothy Considine, Pennsylvania State University. *The Transformation of North American Steel Industry: Drivers, Prospects, and Vulnerabilities*. White paper prepared for the American Iron and Steel Institute. (April 2005).
- <sup>171</sup> U.S. Census Bureau. *Statistics for Industry Groups and Industries: 2004, Annual Survey of Manufacturers*. [M04(AS)-1] (December 2005). Available at <http://www.census.gov/prod/2005pubs/am0431gs1.pdf>.
- U.S. Census Bureau. *Statistics for Industry Groups and Industries: 2001, Annual Survey of Manufacturers*. [M01(AS)-1] (January 2003). Available at <http://www.census.gov/prod/2003pubs/m01as-1.pdf>.
- <sup>172</sup> Considine, T., Pennsylvania State University. *The Transformation of North American Steel Industry: Drivers, Prospects, and Vulnerabilities*. White paper prepared for the American Iron and Steel Institute. (April 2005).
- <sup>173</sup> Considine, T. Pennsylvania State University. *The Transformation of North American Steel Industry: Drivers, Prospects, and Vulnerabilities*. White paper prepared for the American Iron and Steel Institute. (April 2005).
- <sup>174</sup> *CNNMoney.com*, "China in the Crosshairs as Steel Imports Rise." Internet source. (December 21, 2006). Available at <http://money.cnn.com/news/newsfeeds/articles/newstex/RBI-0073-12964819.htm>.
- <sup>175</sup> Stubbles, J. *Energy Use in the U.S. Steel Industry: An Historical Perspective and Future Opportunities*. (September 2000).
- <sup>176</sup> American Iron & Steel Institute. *Saving One Barrel of Oil per Ton (SOBOT): A New Roadmap for Transformation of Steelmaking Process* (October 2005).
- <sup>177</sup> American Iron & Steel Institute. *Saving One Barrel of Oil per Ton (SOBOT): A New Roadmap for Transformation of Steelmaking Process* (October 2005).

## References

---

- <sup>178</sup> U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Industrial Technologies Program. *Steel Industry Marginal Opportunity Study*. (September 2005). Analysis prepared by Energetics, Inc.
- <sup>179</sup> American Iron & Steel Institute. *Saving One Barrel of Oil per Ton (SOBOT): A New Roadmap for Transformation of Steelmaking Process* (October 2005).
- <sup>180</sup> American Iron & Steel Institute. *Saving One Barrel of Oil per Ton (SOBOT): A New Roadmap for Transformation of Steelmaking Process* (October 2005).
- <sup>181</sup> U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Industrial Technologies Program. *Energy Use, Loss, and Opportunities Analysis: U.S. Manufacturing and Mining*. (December 2004). Analysis prepared by Energetics, Inc. and E3M, Incorporated. Available at [http://www.eere.energy.gov/industry/energy\\_systems/pdfs/energy\\_use\\_loss\\_opportunities\\_analysis.pdf](http://www.eere.energy.gov/industry/energy_systems/pdfs/energy_use_loss_opportunities_analysis.pdf).
- <sup>182</sup> Timothy Considine, Pennsylvania State University. *The Transformation of North American Steel Industry: Drivers, Prospects, and Vulnerabilities*. White paper prepared for the American Iron and Steel Institute. (April 2005).
- <sup>183</sup> Steel Recycling Institute. *Steel Recycling Rates at a Glance: 2005 Steel Recycling Rates*. Available at <http://www.recycle-steel.org/PDFs/2005Graphs.pdf>.
- <sup>184</sup> Stubbles, J. *Energy Use in the U.S. Steel Industry: An Historical Perspective and Future Opportunities*. (September 2000).
- <sup>185</sup> U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Industrial Technologies Program. *Steel Industry Marginal Opportunity Study*. (September 2005). Analysis prepared by Energetics, Inc.
- <sup>186</sup> U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Industrial Technologies Program. *Energy Use, Loss, and Opportunities Analysis: U.S. Manufacturing and Mining*. (December 2004). Prepared by Energetics, Inc. and E3M, Incorporated. Available at [http://www.eere.energy.gov/industry/energy\\_systems/pdfs/energy\\_use\\_loss\\_opportunities\\_analysis.pdf](http://www.eere.energy.gov/industry/energy_systems/pdfs/energy_use_loss_opportunities_analysis.pdf).
- <sup>187</sup> American Iron & Steel Institute. *Saving One Barrel of Oil per Ton (SOBOT): A New Roadmap for Transformation of Steelmaking Process* (October 2005).
- <sup>188</sup> American Iron & Steel Institute. *Saving One Barrel of Oil per Ton (SOBOT): A New Roadmap for Transformation of Steelmaking Process* (October 2005).
- <sup>189</sup> U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Industrial Technologies Program. *Steel Industry Marginal Opportunity Study*. (September 2005). Analysis prepared by Energetics, Inc.
- <sup>190</sup> Larry Kavanaugh, American Iron & Steel Institute (AISI). Personal communication. (January 29, 2007).
- <sup>191</sup> U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Industrial Technologies Program. *Steel Industry Marginal Opportunity Study*. (September 2005). Analysis prepared by Energetics, Inc.
- <sup>192</sup> American Iron & Steel Institute. *Saving One Barrel of Oil per Ton (SOBOT): A New Roadmap for Transformation of Steelmaking Process* (October 2005).
- <sup>193</sup> Elliott, Shipley, Brown. *CHP Five Years Later: Federal and State Policies and Programs Update*. [Report Number IE031.] (January 2003).
- <sup>194</sup> Larry Kavanaugh, American Iron & Steel Institute (AISI). Personal communication. (January 29, 2007).
- <sup>195</sup> American Iron & Steel Institute. *Saving One Barrel of Oil per Ton (SOBOT): A New Roadmap for Transformation of Steelmaking Process* (October 2005).
- <sup>196</sup> U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Industrial Technologies Program. *Steel Industry Marginal Opportunity Study*. (September 2005). Analysis prepared by Energetics, Inc.
- <sup>197</sup> Larry Kavanaugh, American Iron & Steel Institute (AISI). Personal communication. (January 29, 2007).
- <sup>198</sup> American Iron & Steel Institute. *Saving One Barrel of Oil per Ton (SOBOT): A New Roadmap for Transformation of Steelmaking Process* (October 2005).

## References

---

- <sup>199</sup> U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Industrial Technologies Program. *Steel Industry Marginal Opportunity Study*. (September 2005). Analysis prepared by Energetics, Inc.
- <sup>200</sup> U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Industrial Technologies Program. *Steel Industry Marginal Opportunity Study*. (September 2005). Analysis prepared by Energetics, Inc.
- <sup>201</sup> U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Industrial Technologies Program. *Steel Industry Marginal Opportunity Study*. (September 2005). Analysis prepared by Energetics, Inc.
- <sup>202</sup> E. Worrell, L. Price, C. Galitsky, Lawrence Berkeley National Laboratory. *Emerging Energy-Efficient Technologies in Industry: Case Studies of Selected Technologies*. (May 2004). [LBNL-54828]. Analysis prepared on behalf of the National Commission on Energy Policy, through the U.S. Department of Energy. Available at <http://www.energycommission.org/files/finalReport/III.6.a%20-%20EE%20Technol%20in%20Industry%20.pdf>.
- <sup>203</sup> American Iron & Steel Institute. *Saving One Barrel of Oil per Ton (SOBOT): A New Roadmap for Transformation of Steelmaking Process* (October 2005).
- <sup>204</sup> Larry Kavanaugh, American Iron & Steel Institute. Personal communication, December 2006.
- <sup>205</sup> American Iron & Steel Institute. *Saving One Barrel of Oil per Ton (SOBOT): A New Roadmap for Transformation of Steelmaking Process* (October 2005).
- <sup>206</sup> U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Industrial Technologies Program. *Steel Industry Marginal Opportunity Study*. (September 2005). Analysis prepared by Energetics, Inc.
- <sup>207</sup> Larry Kavanaugh, American Iron & Steel Institute (AISI). Personal communication. (January 29, 2007).
- <sup>208</sup> American Iron & Steel Institute. *Saving One Barrel of Oil per Ton (SOBOT): A New Roadmap for Transformation of Steelmaking Process* (October 2005).
- <sup>209</sup> U.S. Department of Energy, Energy Efficiency & Renewable Energy, Industrial Technologies Program. *Metal Casting Industry of the Future: Fiscal Year 2004 Annual Report*.
- <sup>210</sup> Personal correspondence, Jeffrey Kohn, U.S. EPA., with Alfred Spada, Editor-in-Chief of Modern Casting Magazine. (February 2006). As originally cited in U.S. Environmental Protection Agency, Sector Strategies Program, *Sector Strategies Performance Report* (2006).
- <sup>211</sup> U.S. Department of Energy, Energy Efficiency & Renewable Energy, Industrial Technologies Program. *Metal Casting Industry of the Future: Fiscal Year 2004 Annual Report*.
- <sup>212</sup> U.S. Department of Energy, Energy Efficiency & Renewable Energy, Industrial Technologies Program. *Metal Casting Industry of the Future: Fiscal Year 2004 Annual Report*.
- <sup>213</sup> U.S. Department of Energy, Energy Efficiency and Renewable Energy, Industrial Technologies Program. *Energy Use in Selected Metalcasting Facilities*. (May 2004). Analysis prepared by Eppich Technologies.
- <sup>214</sup> Kirgin, K., Stratecasts, Inc. *Modern Casting Magazine*, "Casting Sales Forecast to Grow 15% By '08." Vol. 96, No. 1 (January 2006). Available at [www.moderncasting.com](http://www.moderncasting.com). As originally cited in U.S. Environmental Protection Agency, Sector Strategies Program, *Sector Strategies Performance Report*. (2006).
- <sup>215</sup> U.S. Census Bureau. *Statistics for Industry Groups and Industries: 2004, Annual Survey of Manufacturers* (December 2005), Available at <http://www.census.gov/prod/2005pubs/am0431gs1.pdf>.
- <sup>216</sup> U.S. Department of Energy, Energy Efficiency & Renewable Energy, Industrial Technologies Program. *Metal Casting Industry of the Future: Fiscal Year 2004 Annual Report*.
- <sup>217</sup> U.S. Department of Energy, Energy Efficiency & Renewable Energy, Industrial Technologies Program. *Metal Casting Industry of the Future: Fiscal Year 2004 Annual Report*.
- <sup>218</sup> U.S. Department of Energy, Industrial Technologies Program. *Advanced Melting Technologies: Energy Saving Concepts and Opportunities for the Metal Casting Industry*. (November 2005). Analysis prepared by BCS, Incorporated. Available at <http://www.eere.energy.gov/industry/metalcasting/pdfs/advancedmeltingtechnologies.pdf>.

## References

---

- <sup>219</sup> U.S. Department of Energy, Industrial Technologies Program. *Advanced Melting Technologies: Energy Saving Concepts and Opportunities for the Metal Casting Industry*. (November 2005). Analysis prepared by BCS, Incorporated. Available at <http://www.eere.energy.gov/industry/metalcasting/pdfs/advancedmeltingtechnologies.pdf>.
- <sup>220</sup> U.S. Department of Energy, Office of Industrial Technologies. *Energy and Environmental Profile of the U.S. Metal Casting Industry*. (September 1999). Analysis prepared by Energetics, Inc. Available at <http://www.eere.energy.gov/industry/metalcasting/pdfs/profile.pdf>.
- <sup>221</sup> U.S. Department of Energy, Industrial Technologies Program. *Theoretical/Best Practice Energy Use in Metalcasting Operations*. Analysis prepared by KERAMIDA Environmental, Inc., Schifo, J.F., and Radia, J.T. (May 2004). Available at [http://www.eere.energy.gov/industry/metalcasting/pdfs/doebestpractice\\_052804.pdf](http://www.eere.energy.gov/industry/metalcasting/pdfs/doebestpractice_052804.pdf).
- <sup>222</sup> U.S. Department of Energy, Industrial Technologies Program. *Theoretical/Best Practice Energy Use in Metalcasting Operations*. Analysis prepared by KERAMIDA Environmental, Inc., Schifo, J.F., and Radia, J.T. (May 2004). Available at [http://www.eere.energy.gov/industry/metalcasting/pdfs/doebestpractice\\_052804.pdf](http://www.eere.energy.gov/industry/metalcasting/pdfs/doebestpractice_052804.pdf).
- <sup>223</sup> U.S. Department of Energy, Industrial Technologies Program. *Advanced Melting Technologies: Energy Saving Concepts and Opportunities for the Metal Casting Industry*. (November 2005). Analysis prepared by BCS, Incorporated. Available at <http://www.eere.energy.gov/industry/metalcasting/pdfs/advancedmeltingtechnologies.pdf>.
- <sup>224</sup> U.S. Department of Energy, Industrial Technologies Program. *Advanced Melting Technologies: Energy Saving Concepts and Opportunities for the Metal Casting Industry*. (November 2005). Analysis prepared by BCS, Incorporated. Available at <http://www.eere.energy.gov/industry/metalcasting/pdfs/advancedmeltingtechnologies.pdf>.
- <sup>225</sup> U.S. Department of Energy, Energy Efficiency and Renewable Energy, Industrial Technologies Program. *Energy Use in Selected Metalcasting Facilities*. (May 2004). Analysis prepared by Eppich Technologies.
- <sup>226</sup> U.S. Department of Energy, Industrial Technologies Program. *Theoretical/Best Practice Energy Use in Metalcasting Operations*. Analysis prepared by KERAMIDA Environmental, Inc., Schifo, J.F., and Radia, J.T. (May 2004). Available at [http://www.eere.energy.gov/industry/metalcasting/pdfs/doebestpractice\\_052804.pdf](http://www.eere.energy.gov/industry/metalcasting/pdfs/doebestpractice_052804.pdf).
- <sup>227</sup> U.S. Department of Energy, Industrial Technologies Program. *Advanced Melting Technologies: Energy Saving Concepts and Opportunities for the Metal Casting Industry*. (November 2005). Analysis prepared by BCS, Incorporated. Available at <http://www.eere.energy.gov/industry/metalcasting/pdfs/advancedmeltingtechnologies.pdf>.
- <sup>228</sup> U.S. Department of Energy, Industrial Technologies Program. *Theoretical/Best Practice Energy Use in Metalcasting Operations*. Analysis prepared by KERAMIDA Environmental, Inc., Schifo, J.F., and Radia, J.T. (May 2004). Available at [http://www.eere.energy.gov/industry/metalcasting/pdfs/doebestpractice\\_052804.pdf](http://www.eere.energy.gov/industry/metalcasting/pdfs/doebestpractice_052804.pdf).
- <sup>229</sup> U.S. Department of Energy, Industrial Technologies Program. *Theoretical/Best Practice Energy Use in Metalcasting Operations*. Analysis prepared by KERAMIDA Environmental, Inc., Schifo, J.F., and Radia, J.T. (May 2004). Available at [http://www.eere.energy.gov/industry/metalcasting/pdfs/doebestpractice\\_052804.pdf](http://www.eere.energy.gov/industry/metalcasting/pdfs/doebestpractice_052804.pdf).
- <sup>230</sup> U.S. Department of Energy, Industrial Technologies Program. *Theoretical/Best Practice Energy Use in Metalcasting Operations*. Analysis prepared by KERAMIDA Environmental, Inc., Schifo, J.F., and Radia, J.T. (May 2004). Available at [http://www.eere.energy.gov/industry/metalcasting/pdfs/doebestpractice\\_052804.pdf](http://www.eere.energy.gov/industry/metalcasting/pdfs/doebestpractice_052804.pdf).
- <sup>231</sup> U.S. Department of Energy, Industrial Technologies Program. *Theoretical/Best Practice Energy Use in Metalcasting Operations*. Analysis prepared by KERAMIDA Environmental, Inc., Schifo, J.F., and Radia, J.T. (May 2004). Available at [http://www.eere.energy.gov/industry/metalcasting/pdfs/doebestpractice\\_052804.pdf](http://www.eere.energy.gov/industry/metalcasting/pdfs/doebestpractice_052804.pdf). As originally cited in U.S. Environmental Protection Agency, Sector Strategies Program, *Sector Strategies Performance Report*. (2006).
- <sup>232</sup> U.S. Department of Energy, Industrial Technologies Program. *Advanced Melting Technologies: Energy Saving Concepts and Opportunities for the Metal Casting Industry*. (November 2005). Analysis prepared by BCS, Incorporated. Available at <http://www.eere.energy.gov/industry/metalcasting/pdfs/advancedmeltingtechnologies.pdf>.
- <sup>233</sup> U.S. Department of Energy, Industrial Technologies Program. *Advanced Melting Technologies: Energy Saving Concepts and Opportunities for the Metal Casting Industry*. (November 2005). Analysis prepared by BCS, Incorporated. Available at <http://www.eere.energy.gov/industry/metalcasting/pdfs/advancedmeltingtechnologies.pdf>.

## References

---

- <sup>234</sup> U.S. Department of Energy, Energy Efficiency & Renewable Energy, Industrial Technologies Program. *Metal Casting Industry of the Future: Fiscal Year 2004 Annual Report*.
- <sup>235</sup> U.S. Census Bureau. *County Business Patterns, CenStats Databases*. (Accessed September 1, 2006.) Available at <http://censtats.census.gov/cbpnaic/cbpnaic.shtml>.
- <sup>236</sup> U.S. Census Bureau. *County Business Patterns, CenStats Databases*. (Accessed September 1, 2006.) Available at <http://censtats.census.gov/cbpnaic/cbpnaic.shtml>.
- <sup>237</sup> U.S. Census Bureau. *County Business Patterns, CenStats Databases*. (Accessed September 1, 2006.) Available at <http://censtats.census.gov/cbpnaic/cbpnaic.shtml>.
- <sup>238</sup> U.S. Census Bureau. *Statistics for Industry Groups and Industries: 2001, Annual Survey of Manufacturers*. (January 2003), Available at <http://www.census.gov/prod/2003pubs/m01as-1.pdf>.  
U.S. Census Bureau. *Statistics for Industry Groups and Industries: 2004, Annual Survey of Manufacturers*. (December 2005), Available at <http://www.census.gov/prod/2005pubs/am0431gs1.pdf>.
- <sup>239</sup> Personal communication with Larry Boyd, Energy Industries of Ohio, (December 7, 2006).
- <sup>240</sup> U.S. Census Bureau. *Statistics for Industry Groups and Industries: 2004, Annual Survey of Manufacturers*. [M04(AS)-1]. (December 2005). Available at <http://www.census.gov/prod/2005pubs/am0431gs1.pdf>.  
U.S. Census Bureau. *Statistics for Industry Groups and Industries: 2001, Annual Survey of Manufacturers*. [M01(AS)-1]. (January 2003). Available at <http://www.census.gov/prod/2003pubs/m01as-1.pdf>.
- <sup>241</sup> U.S. Census Bureau. *Statistics for Industry Groups and Industries: 2004, Annual Survey of Manufacturers*. [M04(AS)-1]. (December 2005). Available at <http://www.census.gov/prod/2005pubs/am0431gs1.pdf>.  
U.S. Census Bureau. *Statistics for Industry Groups and Industries: 2001, Annual Survey of Manufacturers*. [M01(AS)-1]. (January 2003). Available at <http://www.census.gov/prod/2003pubs/m01as-1.pdf>.
- <sup>242</sup> National Metal Finishing Strategic Goals Program. Internet source. (Accessed February 7, 2006). Available at <http://www.strategicgoals.org/reports2/t7.cfm?state=all&requesttimeout=300>.
- <sup>243</sup> Personal communication with Larry Boyd, Energy Industries of Ohio, (December 7, 2006).
- <sup>244</sup> Personal communication with Larry Boyd, Energy Industries of Ohio, (December 7, 2006).
- <sup>245</sup> Personal communication with Robin Kime, U.S. Environmental Protection Agency, February 7, 2006.
- <sup>246</sup> Martin, N., Worrell, E., Price, Ruth, et. al. Ernest Orlando Lawrence Berkeley National Laboratory. *Emerging Energy-Efficient Industrial Technologies*. [LBNL46990.] (October 2000). Available at <http://ies.lbl.gov/iespubs/46990.pdf>.
- <sup>247</sup> Elliott, Shipley, Brown. *CHP Five Years Later: Federal and State Policies and Programs Update*. [Report Number IE031.] (January 2003).
- <sup>248</sup> National Metal Finishing Resource Center. Internet source. Available at <http://www.nmfr.org>.
- <sup>249</sup> U.S. Census Bureau. *2002 NAICS Definitions*. (2003). Internet source. (Accessed March 1, 2006.) Available at <http://www.census.gov/epcd/naics02/def/ND336111.HTM#N336111>.
- <sup>250</sup> Alliance of Automobile Manufacturers. *U.S. Production Facilities*. (2006).
- <sup>251</sup> Klier, T. and Rubenstein, J. *Chicago Fed Letter*. "The U.S. Auto Supplier Industry in Transition." (May 2006). Available at [http://findarticles.com/p/articles/mi\\_qa3631/is\\_200605/ai\\_n16139151](http://findarticles.com/p/articles/mi_qa3631/is_200605/ai_n16139151).
- <sup>252</sup> Ernest Orlando Lawrence Berkeley National Laboratory (LBNL). *Energy Efficiency Improvement and Cost Saving Opportunities for the Vehicle Assembly Industry: An ENERGY STAR Guide for Energy and Plant Managers*. [LBNL-50939]. (January 2003). Available at <http://ies.lbl.gov/iespubs/50939.pdf>.
- <sup>253</sup> U.S. Census Bureau. *Statistics for Industry Groups and Industries: 2004, Annual Survey of Manufacturers*. [M04(AS)-1] (December 2005). Available at <http://www.census.gov/prod/2005pubs/am0431gs1.pdf>.

## References

---

- U.S. Census Bureau. *Statistics for Industry Groups and Industries: 2001, Annual Survey of Manufacturers*, [M01(AS)-1] (January 2003). Available at <http://www.census.gov/prod/2003pubs/m01as-1.pdf>.
- <sup>254</sup> Ernest Orlando Lawrence Berkeley National Laboratory (LBNL). *Energy Efficiency Improvement and Cost Saving Opportunities for the Vehicle Assembly Industry: An ENERGY STAR Guide for Energy and Plant Managers*. [LBNL-50939]. (January 2003). Available at <http://ies.lbl.gov/iespubs/50939.pdf>.
- <sup>255</sup> Ernest Orlando Lawrence Berkeley National Laboratory (LBNL). *Energy Efficiency Improvement and Cost Saving Opportunities for the Vehicle Assembly Industry: An ENERGY STAR Guide for Energy and Plant Managers*. [LBNL-50939]. (January 2003). Available at <http://ies.lbl.gov/iespubs/50939.pdf>.
- <sup>256</sup> Ernest Orlando Lawrence Berkeley National Laboratory (LBNL). *Energy Efficiency Improvement and Cost Saving Opportunities for the Vehicle Assembly Industry: An ENERGY STAR Guide for Energy and Plant Managers*. [LBNL-50939]. (January 2003). Available at <http://ies.lbl.gov/iespubs/50939.pdf>.
- <sup>257</sup> Ernest Orlando Lawrence Berkeley National Laboratory (LBNL). *Energy Efficiency Improvement and Cost Saving Opportunities for the Vehicle Assembly Industry: An ENERGY STAR Guide for Energy and Plant Managers*. [LBNL-50939]. (January 2003). Available at <http://ies.lbl.gov/iespubs/50939.pdf>.
- <sup>258</sup> U.S. Census Bureau. *Statistics for Industry Groups and Industries: 2001, Annual Survey of Manufacturers* (January 2003). Available at <http://www.census.gov/prod/2003pubs/m01as-1.pdf>.
- U.S. Census Bureau. *Statistics for Industry Groups and Industries: 2004, Annual Survey of Manufacturers* (December 2005). Available at <http://www.census.gov/prod/2005pubs/am0431gs1.pdf>.
- <sup>259</sup> Ernest Orlando Lawrence Berkeley National Laboratory (LBNL). *Energy Efficiency Improvement and Cost Saving Opportunities for the Vehicle Assembly Industry: An ENERGY STAR Guide for Energy and Plant Managers*. [LBNL-50939]. (January 2003). Available at <http://ies.lbl.gov/iespubs/50939.pdf>.
- <sup>260</sup> Valerie Ughetta, Director, Stationary Sources, Alliance of Automobile Manufacturers. Personal communication with Alison Keane, U.S. Environmental Protection Agency (January 25, 2007).
- <sup>261</sup> Ernest Orlando Lawrence Berkeley National Laboratory (LBNL). *Energy Efficiency Improvement and Cost Saving Opportunities for the Vehicle Assembly Industry: An ENERGY STAR Guide for Energy and Plant Managers*. [LBNL-50939]. (January 2003). Available at <http://ies.lbl.gov/iespubs/50939.pdf>.
- Valerie Ughetta, Director, Stationary Sources, Alliance of Automobile Manufacturers. Personal communication with Alison Keane, U.S. Environmental Protection Agency (January 25, 2007).
- <sup>262</sup> Ernest Orlando Lawrence Berkeley National Laboratory (LBNL). *Energy Efficiency Improvement and Cost Saving Opportunities for the Vehicle Assembly Industry: An ENERGY STAR Guide for Energy and Plant Managers*. [LBNL-50939]. (January 2003). Available at <http://ies.lbl.gov/iespubs/50939.pdf>.
- <sup>263</sup> Elliott, Shipley, Brown. *CHP Five Years Later: Federal and State Policies and Programs Update*. [Report Number IE031.] (January 2003).
- <sup>264</sup> Ernest Orlando Lawrence Berkeley National Laboratory (LBNL). *Energy Efficiency Improvement and Cost Saving Opportunities for the Vehicle Assembly Industry: An ENERGY STAR Guide for Energy and Plant Managers*. [LBNL-50939]. (January 2003) Available at <http://ies.lbl.gov/iespubs/50939.pdf>.
- <sup>265</sup> Ernest Orlando Lawrence Berkeley National Laboratory (LBNL). *Energy Efficiency Improvement and Cost Saving Opportunities for the Vehicle Assembly Industry: An ENERGY STAR Guide for Energy and Plant Managers*. [LBNL-50939]. (January 2003). Available at <http://ies.lbl.gov/iespubs/50939.pdf>.
- <sup>266</sup> U.S. Environmental Protection Agency. *New Source Review: Report to the President*. (June 2002).
- <sup>267</sup> Ernest Orlando Lawrence Berkeley National Laboratory (LBNL). *Energy Efficiency Improvement and Cost Saving Opportunities for the Vehicle Assembly Industry: An ENERGY STAR Guide for Energy and Plant Managers*. [LBNL-50939]. (January 2003). Available at <http://ies.lbl.gov/iespubs/50939.pdf>.
- <sup>268</sup> U.S. Census Bureau. *Statistics for Industry Groups and Industries: 2004, Annual Survey of Manufacturers*. (December 2005). Available at <http://www.census.gov/prod/2005pubs/am0431gs1.pdf>.

## References

---

- <sup>269</sup> Automotive Parts Manufacturers' Association (APMA). *Energy Practice Benchmarking*. Available at [http://www.apma.ca/client/apma/apma.nsf/object/APMA+Benchmarking+Survey/\\$file/APMA+Benchmarking+Survey.pdf](http://www.apma.ca/client/apma/apma.nsf/object/APMA+Benchmarking+Survey/$file/APMA+Benchmarking+Survey.pdf).
- <sup>270</sup> U.S. Census Bureau. *Statistics for Industry Groups and Industries: 2001, Annual Survey of Manufacturers*. (January 2003). Available at <http://www.census.gov/prod/2003pubs/m01as-1.pdf>.
- U.S. Census Bureau. *Statistics for Industry Groups and Industries: 2004, Annual Survey of Manufacturers*. (December 2005). Available at <http://www.census.gov/prod/2005pubs/am0431gs1.pdf>.
- <sup>271</sup> U.S. Census Bureau. *Statistics for Industry Groups and Industries: 2001, Annual Survey of Manufacturers*. (January 2003). Available at <http://www.census.gov/prod/2003pubs/m01as-1.pdf>.
- U.S. Census Bureau. *Statistics for Industry Groups and Industries: 2004, Annual Survey of Manufacturers*. (December 2005). Available at <http://www.census.gov/prod/2005pubs/am0431gs1.pdf>.
- <sup>272</sup> Automotive Parts Manufacturers' Association (APMA). *Energy Practice Benchmarking*. Available at [http://www.apma.ca/client/apma/apma.nsf/object/APMA+Benchmarking+Survey/\\$file/APMA+Benchmarking+Survey.pdf](http://www.apma.ca/client/apma/apma.nsf/object/APMA+Benchmarking+Survey/$file/APMA+Benchmarking+Survey.pdf).
- <sup>273</sup> Automotive Parts Manufacturers' Association (APMA). *Energy Practice Benchmarking*. Available at [http://www.apma.ca/client/apma/apma.nsf/object/APMA+Benchmarking+Survey/\\$file/APMA+Benchmarking+Survey.pdf](http://www.apma.ca/client/apma/apma.nsf/object/APMA+Benchmarking+Survey/$file/APMA+Benchmarking+Survey.pdf).
- <sup>274</sup> Automotive Parts Manufacturers' Association (APMA). *Energy Practice Benchmarking*. Available at [http://www.apma.ca/client/apma/apma.nsf/object/APMA+Benchmarking+Survey/\\$file/APMA+Benchmarking+Survey.pdf](http://www.apma.ca/client/apma/apma.nsf/object/APMA+Benchmarking+Survey/$file/APMA+Benchmarking+Survey.pdf).
- <sup>275</sup> Automotive Parts Manufacturers' Association (APMA). *Energy Practice Benchmarking*. Available at [http://www.apma.ca/client/apma/apma.nsf/object/APMA+Benchmarking+Survey/\\$file/APMA+Benchmarking+Survey.pdf](http://www.apma.ca/client/apma/apma.nsf/object/APMA+Benchmarking+Survey/$file/APMA+Benchmarking+Survey.pdf).
- <sup>276</sup> U.S. Department of Energy, Industrial Technologies Program. *Plastics: Industrial Assessment*. (July 2003). Available at <http://www.nrel.gov/docs/fy05osti/38529.pdf>.
- <sup>277</sup> U.S. Department of Energy, Office of Industrial Technologies. *Energy and Environmental Profile of the U.S. Petroleum Refining Industry*. (December 1998). Analysis prepared by Energetics, Inc. Available at [http://www.eere.energy.gov/industry/petroleum\\_refining/pdfs/profile.pdf](http://www.eere.energy.gov/industry/petroleum_refining/pdfs/profile.pdf).
- <sup>278</sup> U.S. Department of Energy, Energy Information Administration. *Manufacturing Energy Consumption Survey, 2002 Data Tables*, Table 1.2, Consumption of Energy for All Purposes (First Use). Available at <http://www.eia.doe.gov/emeu/mecs/mecs2002/data02/shelltables.html>.
- <sup>279</sup> American Gas Foundation. *Natural Gas Outlook to 2020*. (February 2005). Available at <http://www.gasfoundation.org/ResearchStudies/2020.htm>.
- <sup>280</sup> American Gas Foundation. *Natural Gas Outlook to 2020*. (February 2005). Available at <http://www.gasfoundation.org/ResearchStudies/2020.htm>.
- <sup>281</sup> U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Industrial Technologies Program. *Energy Use, Loss, and Opportunities Analysis: U.S. Manufacturing and Mining*. (December 2004). Prepared by Energetics, Inc. and E3M, Incorporated. Available at [http://www.eere.energy.gov/industry/energy\\_systems/pdfs/energy\\_use\\_loss\\_opportunities\\_analysis.pdf](http://www.eere.energy.gov/industry/energy_systems/pdfs/energy_use_loss_opportunities_analysis.pdf).
- <sup>282</sup> U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Industrial Technologies Program. *Energy Use, Loss, and Opportunities Analysis: U.S. Manufacturing and Mining*. (December 2004). Prepared by Energetics, Inc. and E3M, Incorporated. Available at [http://www.eere.energy.gov/industry/energy\\_systems/pdfs/energy\\_use\\_loss\\_opportunities\\_analysis.pdf](http://www.eere.energy.gov/industry/energy_systems/pdfs/energy_use_loss_opportunities_analysis.pdf).
- <sup>283</sup> U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Industrial Technologies Program. *Energy Use, Loss, and Opportunities Analysis: U.S. Manufacturing and Mining*. (December 2004). Prepared by Energetics, Inc. and E3M, Incorporated. Available at [http://www.eere.energy.gov/industry/energy\\_systems/pdfs/energy\\_use\\_loss\\_opportunities\\_analysis.pdf](http://www.eere.energy.gov/industry/energy_systems/pdfs/energy_use_loss_opportunities_analysis.pdf).
- <sup>284</sup> U.S. Department of Energy, Energy Information Administration. *Annual Energy Outlook 2006* [DOE/EIA-0383(2006)] (February 2006).

## References

---

- <sup>285</sup> Elliott, Shipley, Brown. *CHP Five Years Later: Federal and State Policies and Programs Update*. [Report Number IE031.] (January 2003).
- <sup>286</sup> Interlaboratory Working Group, Oak Ridge National Laboratory and Lawrence Berkeley National Laboratory. *Scenarios for a Clean Energy Future*. [ORNL/CON-476 and LBNL-44029]. (November 2000). Available at <http://www.ornl.gov/sci/eere/cefl>.
- <sup>287</sup> American Petroleum Institute. *Technology Roadmap for the U.S. Petroleum Industry*, Draft. (February 2000). Available at [http://www.eere.energy.gov/industry/petroleum\\_refining/pdfs/petroleumroadmap.pdf](http://www.eere.energy.gov/industry/petroleum_refining/pdfs/petroleumroadmap.pdf).
- <sup>288</sup> American Petroleum Institute. *Technology Roadmap for the U.S. Petroleum Industry*, Draft. (February 2000). Available at [http://www.eere.energy.gov/industry/petroleum\\_refining/pdfs/petroleumroadmap.pdf](http://www.eere.energy.gov/industry/petroleum_refining/pdfs/petroleumroadmap.pdf).
- <sup>289</sup> U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Industrial Technologies Program. *Energy Use, Loss, and Opportunities Analysis: U.S. Manufacturing and Mining*. (December 2004). Prepared by Energetics, Inc. and E3M, Incorporated. Available at [http://www.eere.energy.gov/industry/energy\\_systems/pdfs/energy\\_use\\_loss\\_opportunities\\_analysis.pdf](http://www.eere.energy.gov/industry/energy_systems/pdfs/energy_use_loss_opportunities_analysis.pdf).
- <sup>290</sup> American Petroleum Institute. *Technology Roadmap for the U.S. Petroleum Industry*, Draft. (February 2000). Available at [http://www.eere.energy.gov/industry/petroleum\\_refining/pdfs/petroleumroadmap.pdf](http://www.eere.energy.gov/industry/petroleum_refining/pdfs/petroleumroadmap.pdf).
- <sup>291</sup> American Petroleum Institute. *Technology Roadmap for the U.S. Petroleum Industry*, Draft. (February 2000). Available at [http://www.eere.energy.gov/industry/petroleum\\_refining/pdfs/petroleumroadmap.pdf](http://www.eere.energy.gov/industry/petroleum_refining/pdfs/petroleumroadmap.pdf).
- <sup>292</sup> American Petroleum Institute. *Technology Roadmap for the U.S. Petroleum Industry*, Draft. (February 2000). Available at [http://www.eere.energy.gov/industry/petroleum\\_refining/pdfs/petroleumroadmap.pdf](http://www.eere.energy.gov/industry/petroleum_refining/pdfs/petroleumroadmap.pdf).
- <sup>293</sup> Climate VISION. *Private Sector Initiatives*. Internet source. (Accessed September 13, 2006.) Available at <http://www.climatevision.gov/initiatives.html>.
- <sup>294</sup> American Petroleum Institute. *Technology Roadmap for the U.S. Petroleum Industry*, Draft. (February 2000). Available at [http://www.eere.energy.gov/industry/petroleum\\_refining/pdfs/petroleumroadmap.pdf](http://www.eere.energy.gov/industry/petroleum_refining/pdfs/petroleumroadmap.pdf).
- <sup>295</sup> Personal correspondence, Shana Harbour (U.S. EPA) with Beth Gearhart (U.S. Maritime Administration). (December 2005). As originally cited in U.S. Environmental Protection Agency, Sector Strategies Program, *Sector Strategies Performance Report*. (2006).
- <sup>296</sup> U.S. Census Bureau. *Statistics for Industry Groups and Industries: 2001, Annual Survey of Manufacturers* (January 2003). Available at <http://www.census.gov/prod/2003pubs/m01as-1.pdf>.  
U.S. Census Bureau. *Statistics for Industry Groups and Industries: 2004, Annual Survey of Manufacturers* (December 2005). Available at <http://www.census.gov/prod/2005pubs/am0431gs1.pdf>.
- <sup>297</sup> U.S. Department of Transportation, Maritime Administration. *Outlook for the Shipbuilding and Repair Industry* (June 1998). Available at <http://www.marad.dot.gov/publications/outlook/outlook.htm>. As originally cited in U.S. Environmental Protection Agency, Sector Strategies Program, *Sector Strategies Performance Report*. (2006).
- <sup>298</sup> U.S. Census Bureau. *Statistics for Industry Groups and Industries: 2004, Annual Survey of Manufacturers* (December 2005). Available at <http://www.census.gov/prod/2005pubs/am0431gs1.pdf>.
- <sup>299</sup> U.S. Census Bureau. *Statistics for Industry Groups and Industries: 2001, Annual Survey of Manufacturers* (January 2003). Available at <http://www.census.gov/prod/2003pubs/m01as-1.pdf>.  
U.S. Census Bureau. *Statistics for Industry Groups and Industries: 2004, Annual Survey of Manufacturers* (December 2005). Available at <http://www.census.gov/prod/2005pubs/am0431gs1.pdf>.
- <sup>300</sup> Industry representatives who provided feedback on a previous draft of this report (dated September 21, 2006) included Daniel Youhas (Shipbuilding Council of America), Stacy Ballow (American Shipbuilding Association), Vincent Dickinson (Bath Iron Works). Personal communication (January 12, 2007).
- <sup>301</sup> Industry representatives who provided feedback on a previous draft of this report (dated September 21, 2006) included Daniel Youhas (Shipbuilding Council of America), Stacy Ballow (American Shipbuilding Association), Vincent Dickinson (Bath Iron Works). Personal communication (January 12, 2007).

## References

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- <sup>302</sup> Industry representatives who provided feedback on a previous draft of this report (dated September 21, 2006) included Daniel Youhas (Shipbuilding Council of America), Stacy Ballow (American Shipbuilding Association), Vincent Dickinson (Bath Iron Works). Personal communication (January 12, 2007).
- <sup>303</sup> Metalpass.com. *Introduction to Welding Industry Roadmap*. Internet source. (2002). Available at <http://www.metalpass.com/metaldoc/paper.aspx?docID=122>.
- <sup>304</sup> U.S. Department of Energy, Industrial Technologies Program. *Cost-Saving Strategies at a Metal Forging Plant*. (2005). Internet source. Available at [http://www.eere.energy.gov/industry/bestpractices/energymatters/articles.cfm/article\\_id=5](http://www.eere.energy.gov/industry/bestpractices/energymatters/articles.cfm/article_id=5).
- <sup>305</sup> American Forest & Paper Association representatives who provided feedback on a previous draft of this report (dated September 21, 2006) included Jerry Schwartz, Stan Lancey, Sundar Mahadevan, Tim Hunt, and Laurie Holmes. Personal communication (December 8, 2006).
- <sup>306</sup> National Commission on Energy Policy. *Ending the Energy Stalemate: A Bipartisan Strategy to Meet America's Energy Challenges*, (December 2004).
- <sup>307</sup> American Forest & Paper Association representatives who provided feedback on a previous draft of this report (dated September 21, 2006) included Jerry Schwartz, Stan Lancey, Sundar Mahadevan, Tim Hunt, and Laurie Holmes. Personal communication (December 8, 2006).
- <sup>308</sup> Personal communication with Arvind Atreya, Professor and Director of the Industrial Assessment Center, University of Michigan, Department of Mechanical Engineering (December 7, 2006).
- <sup>309</sup> Personal communication with Larry Boyd, Energy Industries of Ohio, (December 7, 2006).
- <sup>310</sup> U.S. Environmental Protection Agency. *Output-Based Regulations: A Handbook for Air Regulators*. (August 2004). Prepared by Energy and Environmental Analysis.
- <sup>311</sup> U.S. Environmental Protection Agency. *Output-Based Regulations: A Handbook for Air Regulators*. (August 2004). Prepared by Energy and Environmental Analysis.
- <sup>312</sup> U.S. Department of Energy, Industrial Technologies Program. *Advanced Melting Technologies: Energy Saving Concepts and Opportunities for the Metal Casting Industry*. (November 2005). Analysis prepared by BCS, Incorporated. Available at <http://www.eere.energy.gov/industry/metalcasting/pdfs/advancedmeltingtechnologies.pdf>.
- <sup>313</sup> U.S. Environmental Protection Agency. *New Source Review: Report to the President*. (June 2002).
- <sup>314</sup> Choate, W., BCS Incorporated. *Energy and Emission Reduction Opportunities for the Cement Industry*. (December 2003). Prepared under contract for U.S. Department of Energy, Industrial Technologies Program. Available at [http://www.eere.energy.gov/industry/imf/pdfs/leeroci\\_dec03a.pdf](http://www.eere.energy.gov/industry/imf/pdfs/leeroci_dec03a.pdf).
- <sup>315</sup> American Forest & Paper Association representatives who provided feedback on a previous draft of this report (dated September 21, 2006) included Jerry Schwartz, Stan Lancey, Sundar Mahadevan, Tim Hunt, and Laurie Holmes. Personal communication (December 8, 2006).
- <sup>316</sup> Kelliher, J. T., Federal Energy Regulatory Commission (FERC). *Chairman Joseph T. Kelliher's statement on new PURPA section 210(m) regulations applicable to small power production and cogeneration facilities*. Internet source. (October 19, 2006). Available at <http://www.ferc.gov/press-room/statements-speeches/kelliher/2006/10-19-06-kelliher-E-2.asp>.
- <sup>317</sup> American Forest & Paper Association representatives who provided feedback on a previous draft of this report (dated September 21, 2006) included Jerry Schwartz, Stan Lancey, Sundar Mahadevan, Tim Hunt, and Laurie Holmes. Personal communication (December 8, 2006).
- <sup>318</sup> American Iron & Steel Institute (AISI) representatives who provided feedback on a previous draft of this report (dated September 21, 2006) included Jim Schultz, Larry Kavanaugh, and Bill Obenchain. Personal communication (December 6, 2006).
- <sup>319</sup> United States Combined Heat and Power Association. *Key Barriers and Issues for CHP*. Internet source. Available at <http://uschpa.admgt.com/CHPIssues.htm>.
- <sup>320</sup> National Renewable Energy Laboratory. *Making Connections: Case Studies of Interconnection Barriers and their Impact on Distributed Power Projects*. [NREL/SR-200-28053.] (July 2000). Available at <http://www.nrel.gov/docs/fy00osti/28053.pdf>.

## References

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- <sup>321</sup> Elliott, Shipley, Brown. *CHP Five Years Later: Federal and State Policies and Programs Update*. [Report Number IE031.] (January 2003).
- <sup>322</sup> United States Combined Heat and Power Association. *Key Barriers and Issues for CHP*. Internet source. Available at <http://uschpa.admgt.com/CHPIssues.htm>.
- <sup>323</sup> U.S. Environmental Protection Agency. *Proposed Rule for Improvements to EPA's New Source Review Program: Aggregation, Debottlenecking, and Project Netting*. Fact Sheet. (September 2006). Available at [http://www.epa.gov/nsr/documents/dapn\\_frn\\_fs\\_9-8-06.pdf](http://www.epa.gov/nsr/documents/dapn_frn_fs_9-8-06.pdf).
- <sup>324</sup> Interlaboratory Working Group, Oak Ridge National Laboratory and Lawrence Berkeley National Laboratory. *Scenarios for a Clean Energy Future*. [ORNL/CON-476 and LBNL-44029]. (November 2000). Available at <http://www.ornl.gov/sci/eere/cefl>.
- <sup>325</sup> Interlaboratory Working Group, Oak Ridge National Laboratory and Lawrence Berkeley National Laboratory. *Scenarios for a Clean Energy Future*. [ORNL/CON-476 and LBNL-44029]. (November 2000). Available at <http://www.ornl.gov/sci/eere/cefl>.
- <sup>326</sup> U.S. Department of Energy, Energy Information Administration. *Annual Energy Outlook 2006* [DOE/EIA-0383(2006)] (February 2006).
- <sup>327</sup> American Gas Foundation. *Natural Gas Outlook to 2020*. (February 2005). Available at <http://www.gasfoundation.org/ResearchStudies/2020.htm>.
- <sup>328</sup> Interlaboratory Working Group, Oak Ridge National Laboratory and Lawrence Berkeley National Laboratory. *Scenarios for a Clean Energy Future*. [ORNL/CON-476 and LBNL-44029]. (November 2000). Available at <http://www.ornl.gov/sci/eere/cefl>.
- <sup>329</sup> Interlaboratory Working Group, Oak Ridge National Laboratory and Lawrence Berkeley National Laboratory. *Scenarios for a Clean Energy Future*. [ORNL/CON-476 and LBNL-44029]. (November 2000). Available at <http://www.ornl.gov/sci/eere/cefl>.
- <sup>330</sup> American Gas Foundation. *Natural Gas Outlook to 2020*. (February 2005). Available at <http://www.gasfoundation.org/ResearchStudies/2020.htm>.
- <sup>331</sup> U.S. Department of Energy, Energy Information Administration. *Emissions of Greenhouse Gases in the United States 2004*. Available at <http://www.eia.doe.gov/oiaf/1605/gg05rpt/index.html>.
- <sup>332</sup> U.S. Department of Energy, Energy Information Administration. *Annual Energy Outlook 2006* [DOE/EIA-0383(2006)] (February 2006).
- <sup>333</sup> U.S. Department of Energy, Energy Information Administration. *Annual Energy Outlook 2006* [DOE/EIA-0383(2006)], Appendix D, Table D.2, (February 2006).
- <sup>334</sup> U.S. Department of Energy, Energy Information Administration. *Annual Energy Review 2005*, Table 2.1d [DOE/EIA-0384(2005)] (July 2006). Available at <http://www.eia.doe.gov/emeu/aer/consump.html>.
- <sup>335</sup> Darmstadter, J. *EM Magazine*, "Coal Within a Revised Energy Perspective." Air & Waste Management Association. (July 2006). Available at <http://www.rff.org/rff/Publications/Coal-Revised-Energy-Perspective.cfm>.