

## APPENDIX B

# Tools and Models Referenced in Each Chapter

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Tools and Models Referenced in Each Chapter

## TOOLS AND MODELS REFERENCED IN CHAPTER 2

### EXAMPLES OF AVAILABLE TOOLS FOR ESTIMATING DIRECT ENERGY IMPACTS

#### Internet-Based Methods:

- eCalc  
WEB SITE: <http://ecalc.tamu.edu/>
- EPA Energy Savings Calculators  
WEB SITE: <http://www.energystar.gov/purchasing>
- ENERGY STAR Roofing Comparison Calculator  
WEB SITE: <http://www.roofcalc.com/default.aspx>
- ENERGY STAR Target Finder  
WEB SITE: [http://www.energystar.gov/index.cfm?c=new\\_bldg\\_design.bus\\_target\\_finder](http://www.energystar.gov/index.cfm?c=new_bldg_design.bus_target_finder)
- ENERGY STAR Portfolio Manager  
WEB SITE: <https://www.energystar.gov/benchmark>
- PVWatts  
WEB SITE: [http://rredc.nrel.gov/solar/codes\\_algs/PVWATTS/version1/](http://rredc.nrel.gov/solar/codes_algs/PVWATTS/version1/)

#### Spreadsheet-Based Methods:

- EMD International WindPro  
WEB SITE: <http://www.emd.dk/WindPRO/Introduction/>
- RETScreen Clean Energy Project Analysis Software  
WEB SITE: <http://www.retscreen.net/ang/home.php>
- Integral Analytics: DSMore  
WEB SITE: <http://www.integralanalytics.com/dsmore.php>

#### Software Methods:

- fChart and PV-fChart  
WEB SITE: <http://www.fchart.com/index.shtml>
- EQuest  
WEB SITE: <http://www.doe2.com/equest/>
- ENERGY-10™  
WEB SITE: <http://www.nrel.gov/buildings/energy10.html>

- DOE-2  
WEB SITE: <http://doe2.com/DOE2/index.html>

### EXAMPLES OF SOPHISTICATED SUPPLY FORECASTING MODELS

#### Electricity Dispatch:

- PROSYM  
WEB SITE: <http://www1.ventyx.com/analytics/market-analytics.asp>
- GE-MAPS  
WEB SITE: [http://www.gepower.com/prod\\_serv/products/utility\\_software/en/ge\\_maps/index.htm](http://www.gepower.com/prod_serv/products/utility_software/en/ge_maps/index.htm)
- PROMOD  
WEB SITE: <http://www.ventyx.com/analytics/promod.asp>
- MIDAS  
WEB SITE: <http://www.ventyx.com/advisory/horizons-interactive.asp>

#### Capacity Expansion or Planning:

- NEMS  
WEB SITE: <http://www.eia.doe.gov/oiaf/aeo/overview/index.html>
- IPM®  
WEB SITE: <http://www.icfi.com/Markets/Energy/energy-modeling.asp#2>
- ENERGY 2020  
WEB SITE: <http://www.energy2020.com/>
- Long range Energy Alternatives Planning System (LEAP)  
WEB SITE: <http://www.energycommunity.org/default.asp?action=47>
- Strategist  
WEB SITE: <http://www1.ventyx.com/analytics/strategist.asp>
- Plexos  
WEB SITE: <http://www.energyexemplar.com/>

- EGEAS

WEB SITE: <http://my.epri.com/portal/server.pt?space=CommunityPage&cached=true&parentname=ObjMgr&parentid=2&control=SetCommunity&CommunityID=221&PageIDqueryComId=0>

- AURORAxmp

WEB SITE: [http://www.epis.com/aurora\\_xmp/](http://www.epis.com/aurora_xmp/)

- MARKAL-MACRO

WEB SITE: <http://www.etsap.org/Tools/MARKAL.htm>.

- Ventyx System Optimizer

WEB SITE: <http://www.ventyx.com/analytics/system-optimizer.asp>

## TOOLS AND MODELS REFERENCED IN CHAPTER 3

### DISPATCH MODELS AVAILABLE FOR STATES

- EnerPrise Market Analytics (powered by PRO-SYM) supported by Ventyx.

WEB SITE: <http://www1.ventyx.com/analytics/market-analytics.asp>

- Multi-Area Production Simulation (MAPS™) developed and supported by GE Energy and supported by other contractors.

WEB SITE: [http://www.gepower.com/prod\\_serv/products/utility\\_software/en/ge\\_maps/index.htm](http://www.gepower.com/prod_serv/products/utility_software/en/ge_maps/index.htm)

- Plexos for Power Systems owned by Energy Exemplar.

WEB SITE: (<http://www.energyexemplar.com>)

- PowerBase Suite™ (including PROMOD IV®) supported by Ventyx.

WEB SITE: <http://www1.ventyx.com/analytics/promod.asp>

### ELECTRIC SECTOR-ONLY CAPACITY EXPANSION MODELS

- IPM® developed and supported by ICF International.

WEB SITES:

<http://www.icfi.com/Markets/Energy/energy-modeling.asp#2>

[http://www.icfi.com/markets/energy/doc\\_files/ipmglobal.pdf](http://www.icfi.com/markets/energy/doc_files/ipmglobal.pdf)

- PowerBase Suite™ (including Strategist®) supported by Ventyx.

WEB SITE: <http://www1.ventyx.com/analytics/strategist.asp>

### WHOLE ENERGY–ECONOMY SYSTEM PLANNING MODELS

Energy system-wide models with electricity sector capacity expansion:

- U.S. DOE National Energy Modeling System (NEMS)

WEB SITE: <http://www.eia.doe.gov/oiaf/aeo/overview/>

- MARKet ALlocation (MARKAL) Model  
WEB SITE: <http://www.etsap.org/markal/main.html>

- Energy 2020  
WEB SITE: <http://www.energy2020.com/>

### Specialized proprietary models of the T&D system's operation:

- PowerWorld Corporation's power systems simulation package  
WEB SITE: <http://www.powerworld.com/>
- Siemens (PSS®E) probabilistic analyses and dynamics modeling  
WEB SITE: [https://www.energy.siemens.com/cms/00000031/en/ueberuns/organizati/services/siemenspti/softwareso/Pages/psse\\_1439533.aspx](https://www.energy.siemens.com/cms/00000031/en/ueberuns/organizati/services/siemenspti/softwareso/Pages/psse_1439533.aspx)

## TOOLS AND MODELS REFERENCED IN CHAPTER 4

### TOOLS TO HELP STATE AND LOCAL GOVERNMENTS DEVELOP GHG AND CRITERIA AIR POLLUTANT EMISSION INVENTORIES

- EPA's State Inventory Tool (SIT)  
WEB SITE: [http://www.epa.gov/climatechange/emissions/state\\_guidance.html](http://www.epa.gov/climatechange/emissions/state_guidance.html)
- Clean Air and Climate Protection Software Tool (CACPS)  
WEB SITE: <http://www.cacpsoftware.org/>

### TOOLS STATES CAN USE TO HELP DEVELOP BOTTOM-UP GHG AND CRITERIA AIR POLLUTANT INVENTORIES

#### For GHG inventories:

- Portfolio Manager  
WEB SITE: [http://www.energystar.gov/index.cfm?c=evaluate\\_performance.bus\\_portfoliomanager\\_carbon](http://www.energystar.gov/index.cfm?c=evaluate_performance.bus_portfoliomanager_carbon)

#### For criteria air pollutant inventories:

- Point Sources: Landfill Gas Emissions Model  
WEB SITE: <http://www.epa.gov/ttn/catc/dir1/landgem-v302-guide.pdf>

#### Mobile sources:

- MOBILE6  
WEB SITE: <http://www.epa.gov/OMS/m6.htm>
- NON ROAD 2005  
WEB SITE: <http://www.epa.gov/oms/nonrdmdl.htm>
- Motor Vehicle Emission Simulator (MOVES)  
WEB SITE: <http://www.epa.gov/otaq/models/moves/index.htm>

### DATA SOURCES AND ADDITIONAL RESOURCES FOR TOP-DOWN AND BOTTOM-UP INVENTORIES

- National Emissions Inventory (NEI)  
WEB SITE: <http://www.epa.gov/ttnchie1/trends/>

- eGRID

WEB SITE: <http://www.epa.gov/cleanenergy/energy-resources/egrid/index.html>

- Emissions Collection and Monitoring Plan System (ECMPS)

WEB SITE: <http://www.epa.gov/airmarkets/business/>

- WRI Climate Analysis Indicators Tool:

WEB SITE: <http://cait.wri.org/>

- State Agencies and Universities

- EPA State GHG Inventories

- Local GHG Inventories

## TOOLS FOR FORECASTING FUTURE EMISSIONS

- EPA EIIIP Technical Report Series, Volume X: Emissions Projections.

WEB SITE: <http://www.epa.gov/ttn/chief/eiip/techreport/volume10/x01.pdf>

- EPA State GHG Projection Tool.

WEB SITE: <http://www.epa.gov/climatechange/wycd/stateandlocalgov/analyticaltools.html>

- The Clean Air and Climate Protection Software Tool.

WEB SITE: <http://www.cacpsoftware.org/>

## BASIC AND SOPHISTICATED APPROACHES FOR QUANTIFYING AIR POLLUTANT AND GHG EMISSION EFFECTS OF CLEAN ENERGY INITIATIVES

### Basic Approaches:

- eCalc

WEB SITE: <http://www.ecalc.com/calculator/scientific/>

- OTC Workbook

- CACPS

WEB SITE: <http://www.cacpsoftware.org/>

### Sophisticated Approaches:

#### Electric Dispatch

- PROSYM

WEB SITE: <http://www.ventyx.com/analytics/market-analytics.asp>

- GE-MAPS

WEB SITE: [http://www.gepower.com/prod\\_serv/products/utility\\_software/en/ge\\_maps/index.htm](http://www.gepower.com/prod_serv/products/utility_software/en/ge_maps/index.htm)

- PROMOD

WEB SITE: <http://www.ventyx.com/analytics/promod.asp>

#### Capacity Expansion or Planning

- NEMS

WEB SITE: <http://www.eia.doe.gov/oiaf/aeo/overview/index.html>

- IPM\*

WEB SITE: <http://www.icfi.com/Markets/Energy/energy-modeling.asp#2>

- ENERGY 2020

WEB SITE: <http://www.energy2020.com/>

- LEAP

## TOOLS FOR QUANTIFYING AIR QUALITY AND/OR HEALTH IMPACTS

- SCRAM

WEB SITE: <http://www.epa.gov/ttn/scram/>

- REMSAD

WEB SITE: <http://remsad.saintl.com>

- CAMx

WEB SITE: <http://www.camx.com>

- UAM-V

WEB SITE: <http://uamv.saintl.com>

- CMAQ

WEB SITE: <http://www.epa.gov/AMD/CMAQ/CMAQscienceDoc.html>

- CALPUFF and AERMOD

WEB SITE: [http://www.epa.gov/scram001/dispersion\\_prefrec.htm](http://www.epa.gov/scram001/dispersion_prefrec.htm)

- COBRA

WEB SITE: <http://epa.gov/statelocalclimate/resources/cobra.html>

- BenMAP

WEB SITE: <http://www.epa.gov/air/benmap/>

- ASAP

WEB SITE: <http://www.epa.gov/ttn/ecas/asap.html>

## TOOLS AND MODELS REFERENCED IN CHAPTER 5

### SCREENING TOOLS

- Job and Economic Development Impact (JEDI) Model for Wind Projects

WEB SITE: <http://www.energyfinder.org/>

- REPP Labor Calculator

WEB SITE: <http://www.repp.org/index.html>

- RMI Community Energy Opportunity Finder

WEB SITE: <http://www.energyfinder.org/>

### MODELS FOR ESTIMATING MACROECONOMIC BENEFITS

- IMPLAN® input-output model (IMPLAN)

WEB SITE: <http://www.implan.com/>

- RAND

WEB SITE: <http://www.rand.org/>

- REMI Policy Insight model (REMI)

WEB SITE: <http://www.remi.com/>

- Berkeley Energy and Resources model (BEAR)