BEFORE THE
FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. 070650-EI
FLORIDA POWER & LIGHT COMPANY

IN RE: FLORIDA POWER & LIGHT COMPANY'S PETITION TO DETERMINE NEED FOR TURKEY POINT NUCLEAR UNITS 6 AND 7 ELECTRICAL POWER PLANT

DIRECT TESTIMONY & EXHIBITS OF:

HENRIETTA G. MCBEE

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

FLORIDA POWER & LIGHT COMPANY

DIRECT TESTIMONY OF HENRIETTA G. MCBEE

DOCKET NO. 07_____-EI

OCTOBER 16, 2007

Q. Please state your name and business address.

A. My name is Henrietta G. McBee. My business address is 700 Universe Boulevard, Juno Beach, Florida 33408.

Q. By whom are you employed and what is your position?

A. I am employed by Florida Power & Light Company (FPL or the Company) as Director, Project Development for Renewable Energy.

Q. Please describe your duties and responsibilities in that position.

A. I am responsible for developing renewable energy projects to provide electricity for FPL's customers.

Q. Please describe your educational background and professional experience.

A. I have worked in the electric power generation industry for 24 years. Prior to joining FPL's Project Development group, I managed FPL Energy, LLC's (FPL Energy) wind and biomass renewable energy portfolio east of the Mississippi River. FPL Energy is the largest U.S. generator of solar and wind power, as well as a major producer of energy from other clean sources. My experience includes all aspects of project development and project

management. This includes developing and managing project budgets, costs, financings, and schedules; negotiating with suppliers and partners; arranging land leases and easements with landowners; working with local and state government officials, and third party investors; and coordinating construction, communications, legal, customer requirements, tax, accounting, risk, finance, operations and consultants.

I graduated from the University of Miami with a Bachelor of Science degree in Industrial Engineering; a Master of Science degree in Industrial Engineering; and a Masters in Business Administration with a concentration in finance.

Q. Are you sponsoring any exhibits in this case?

A. Yes. I am sponsoring Exhibits HGM-1 through HGM-4, which are attached to my direct testimony.

Exhibit HGM-1	Renewable Energy Production by State
Exhibit HGM-2	Renewable Energy Production by State Excluding Hydro and Geothermal
Exhibit HGM-3	NREL United States Classes of Wind Power Density Map
Exhibit HGM-4	NREL United States Solar Energy Potential Map

Q. Are you sponsoring any sections of the Need Study?

A. Yes. I am sponsoring Section III.F titled Renewable Energy.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to describe FPL's history of providing energy from renewable energy sources to its customers, some of FPL's programs and development work relating to renewable energy, the results of FPL's recent request for proposals for new renewable energy in Florida, and FPL's assessment of Florida's renewable energy resources.

Q. Please summarize your testimony.

A. U.S. Department of Energy (DOE) data released in July 2007 shows that Florida does a very good job producing energy from its renewable resources. This information shows that Florida ranks second in the nation in renewable energy production when one considers that Florida does not have the abundant hydroelectric and geothermal resources that the highest ranking states have. This is shown in Exhibit HGM-2 to my testimony.

FPL has been providing a portion of its customers' energy needs from renewable resources since 1980. Currently, FPL provides more than 300 MW of power from renewable resources yearly. This energy is purchased from owners of waste-to-energy, biomass and landfill gas power plants located in Florida. From 2001 to 2006, FPL has provided customers with about 1.5% of net energy for load from renewable sources. During 2006, FPL provided its customers with a total of 1,652,258 MWh of electricity from renewable sources.

FPL is working to extract as much energy as technically and economically possible from renewable resources and continues to explore the use of emerging technologies. Today, FPL purchases more than 300 MW of firm and non-firm capacity and energy from renewable resources yearly and has asked for proposals to add even more.

In July 2007, FPL concluded a renewable energy Request for Proposals (2007 Renewable RFP). The 2007 Renewable RFP sought proposals for new renewable energy with expected in-service dates prior to June 2015. The 2007 Renewable RFP also sought information regarding new renewable firm capacity and/or energy sources with expected in-service dates beyond 2015. The 2007 Renewable RFP contained no restriction on price and provided maximum flexibility for potential suppliers of renewable energy in order to encourage as much participation as possible. The 2007 Renewable RFP was available to potential bidders in Florida, across the country and beyond for their consideration and response. As a result of the 2007 Renewable RFP, FPL received proposals from five bidders totaling 144 MW of firm capacity. FPL's incorporation of these potential resources in its Integrated Resource Planning (IRP) analysis underlying this petition is discussed in greater detail in the testimony of FPL witness Sim. In addition, FPL received a proposal for the supply of 100 MW of non-firm capacity and energy from technology under development based on harnessing ocean current energy.

FPL will continue to promote renewable generation in Florida through RFPs and other purchase power agreements, and is exploring direct development of renewable generation projects, including solar and wind. FPL is presently in the process of considering and supporting development of wind and other renewable energy sources in the State of Florida. Additionally, FPL recently announced a major solar energy initiative in Florida which is expected to result in installation of up to 300 MW of solar capacity at a cost of up to an estimated $900 million. FPL is committed to developing the maximum cost-effective amount of renewable resources to serve its customers.

FPL agrees with the general conclusions with respect to availability of renewable energy stated in "An Assessment of Renewable Electric Generating Technologies for Florida" issued by the Florida Public Service Commission (FPSC or Commission) and the Florida Department of Environmental Protection (FDEP) in 2003. While the overall expectation of energy production from renewable sources in Florida is modest, FPL supports development of Florida's renewable resources to the maximum extent feasible. There is ample room for all of the good renewable energy ideas that can be brought forward, and FPL is warmly encouraging of their development and Implementation.

I. FPL's Use of Renewable Energy to Serve Customers

Q. Does FPL use renewable energy to serve its customers?

A. Yes. Since 1980, a portion of FPL's customers' electricity requirements have been produced from renewable resources including waste-to-energy, biomass and landfill gas. FPL procured this energy from the owners and operators of renewable energy facilities. To this end, the Commission recently approved a revised and improved Standard Offer Contract for renewable energy which is available for renewable suppliers' use. The Standard Offer Contract implements the FPSC's recent amendments to its rules concerning Standard Offer Contracts. In addition to being willing to purchase renewable energy for its customers using the Standard Offer Contract, FPL is also willing to negotiate special contracts with renewable energy project owners and operators. For example, FPL is willing to negotiate special contracts for renewable energy with pricing based upon fossil units other than the natural gas-fired combined cycle which is the basis for FPL's Standard Offer Contract. In this regard, FPL is willing to negotiate pricing based upon the economics of solid fuel-fired generating plants, if this is desired by owners or operators of renewable energy facilities.

Q. How much renewable energy does FPL provide to its customers?

A. Today, FPL provides more than 300 MW of firm and non-firm capacity and energy from renewable resources yearly. This energy is purchased from owners of waste-to-energy, biomass and landfill gas power plants located in

Florida. From 2001 to 2006, FPL has provided customers with about 1.5% of net energy for load from renewable sources. During 2006, FPL provided its customers with a total of 1,652,258 MWh of electricity from renewable sources.

Q. How does FPL encourage the development of renewable resources?

A. FPL has a multi-pronged approach to encouraging and supporting the development of renewable resources in Florida. For example, as discussed in greater detail in FPL witness Brandt's testimony, FPL's Product Management and Operations Department supports the development of renewable energy projects and the management of renewable programs offered to FPL's customers. FPL's Project Development organization, of which I am a member, supports the development of renewable supply side generation projects. In addition, as addressed in FPL witness Silva's testimony, FPL's Resource Assessment and Planning organization supports the negotiation of renewable purchase power agreements.

Q. Is FPL actively seeking to maintain and increase the amount of renewable energy that it purchases to serve its customers?

A. Yes. FPL's representatives are in frequent contact with people and entities interested in providing renewable energy. FPL is actively working with the representatives of several prospective suppliers of renewable energy representing a total of up to 179 MW of new renewable energy production, from such resources as landfill gas, waste-to-energy, and solar photovoltaic (PV). This is in addition to the possible new resources that have been

proposed in response to FPL's 2007 Renewable RFP, discussed below, which are being evaluated for possible negotiation. Also as discussed below, FPL is actively working to support development of renewable technologies in Florida.

II. FPL's Support for and Development of Renewable Energy Projects.

Q. In addition to achieving more than 300 MW of renewable energy purchases from waste-to-energy, biomass and landfill gas, is FPL involved in other activities to increase the use of renewable energy in Florida?

A. Yes. In addition to its renewable energy procurement activities, FPL is actively involved in developing and performing due diligence with respect to wind energy and solar energy. FPL is also assisting Florida universities and others with the investigation of possible electric generation using ocean currents. In addition, FPL recently issued a 2007 Renewable RFP, and received several responses totaling 144 MW of firm capacity, described below.

Q. Please comment on the investigation of ocean currents as a source of possible electric generation.

A. Florida is one of the few places in the world that has a major ocean current located near electric load centers. The Gulf Stream that flows off of Florida's coast is a potential future source of ocean current energy. The flowing waters

could turn ocean turbine generators in much the same way that wind turns wind turbine generators. While the technology to do this is still in the research stage, FPL is actively involved with Florida Atlantic University's Florida Center of Excellence in Ocean Energy Technology in developing this non-emitting renewable technology. FPL is hopeful that it may be commercially deployed to serve its customers first in experimental and ultimately in commercial amounts in the future. For example, in response to the 2007 Renewable RFP, FPL received a proposal for the provision of 100 MW of non-firm capacity and energy from ocean current energy. The ocean current energy bid is an instance where FPL, due to its relationships with entities developing innovative new technologies, actively encouraged the submission of a bid where, absent such encouragement, no bid would have been forthcoming.

Q. Please describe FPL's consideration of and approach to developing wind energy in Florida.

A. Since 2004, FPL has attempted to site a wind project along Florida's coast, utilizing several potential locations, but has not yet obtained site approval for a project. Concerns raised with respect to the possible siting of the project have included potential radio signal interference, avian concerns, aircraft flight paths, land availability, and other local land use matters. In June 2007, FPL announced the St. Lucie Wind Project, a 3 to 4.5 MW project, which FPL hopes to site near its St. Lucie nuclear generating plant. FPL is pursuing the necessary permits and performing due diligence required for this project. In

addition, FPL will be pursuing additional wind opportunities that would add to its renewable portfolio, which FPL will build, own and operate to provide renewable energy for customers.

Q. Has FPL supported the development and testing of solar technology?

A. Yes. Much of this work has been managed as part of FPL's successful demand side management (DSM) initiatives, and is described in the testimony of FPL witness Brandt in this proceeding.

Q. Is FPL currently supporting deployment of solar energy technology in Florida?

A. Yes. FPL recently announced a major solar energy initiative in Florida which is expected to result in installation of up to 300 MW of solar capacity at a cost of up to an estimated $900 million. This is expected to begin with installation of about 10 MW of capacity at an existing FPL generating site. While this major new initiative is subject to regulatory, land use and other approvals as well as business due diligence, FPL is optimistic about the potential of using a new solar generating technology to provide service to customers in Florida. FPL witness Brandt's testimony describes FPL's activities with PV technology used for DSM purposes. I am responsible for the supply side deployment of PV. On the supply side, for example, FPL has a solar PV project at its Martin plant site that was first energized in the 1990s. Under FPL's Sunshine Energy Program, a 250 kW PV array is being built in Sarasota, Florida that is expected to be in commercial operation around the end of 2007.

Q. Is FPL participating in the investigation of other renewable energy sources?

A. Yes. FPL has established alliances with several Florida academic institutions, as well as the Florida Solar Energy Center, the Electric Power Research Institute and private companies developing technology concerning investigating other possible future renewable energy sources, such as generating electricity from ocean currents. As I previously mentioned, FPL is actively working with Florida Atlantic University exploring ocean current and ocean thermal (utilizing cold water from deep in the ocean for district cooling) energy, and is spearheading a study to further analyze Florida's off-shore wind potential. In addition, FPL is financially supporting meteorological tower research by the University of Florida. The research results should be useful in better understanding the specifics of using renewable resources such as wind in Florida. FPL is also providing information to the Florida Energy Commission's Renewable Energy Task Force which is assessing various aspects of renewable energy in Florida.

Q. You mentioned FPL's 2007 Renewable RFP. Please describe the RFP.

A. FPL has been soliciting proposals for renewable energy for many years, and this is an established part of FPL's business. FPL's 2007 Renewable RFP was issued on April 23, 2007 in order to identify a variety of proposals for new, viable, renewable firm capacity and/or energy with expected in-service dates prior to June 2015. The RFP also sought to obtain information regarding new

renewable firm capacity and/or energy sources with expected in-service dates beyond 2015.

The RFP solicited proposals for New Renewable Generation Facilities (NRGFs). In order to encourage maximum participation, the RFP encouraged creative proposals, and did not place any conditions on pricing or payment structure, terms and conditions, or any other item, except that the facility is a new facility and that the proposals include the sale of renewable energy credits to FPL. The deadline for submission of proposals was July 2, 2007. FPL is currently evaluating the proposals it received. FPL's incorporation of these potential resources in its IRP analysis underlying FPL's petition in this matter is discussed in greater detail in the testimony of FPL witness Sim.

Q. What were the results of the 2007 Renewable RFP?

A. FPL found that there was widespread interest in the 2007 Renewable RFP, with inquiries from throughout the country, from New York to California. But despite the absence of any pricing limits, the great flexibility afforded for proposals, and the wide dissemination of the RFP, FPL received only five proposals, totaling 144 MW of firm capacity in addition to the 100 MW of non-firm ocean current energy.

Q. Were the results of the 2007 Renewable RFP consistent with results of prior RFPs?

A. Yes. The results were consistent in the sense that prior RFPs, including a prior renewable-only RFP, resulted in proposals ranging from zero to very

little renewable energy being proposed. For example, in 2001 FPL issued a renewable energy RFP which resulted in no offers of firm capacity and only about 580,000 MWh of energy, mainly from biomass and landfill gas.

III. Overview of Renewable Energy Resources In Florida

Q. Have any major assessments been performed of renewable energy resources in Florida?

A. Yes. During 2003 the FPSC and the FDEP issued "An Assessment of Renewable Electric Generating Technologies for Florida" (the FPSC/FDEP Renewable Assessment). The FPSC/FDEP Renewable Assessment contained several key conclusions which in FPL's view accurately describe the overall range of technologies and aggregate capability of renewable resources reasonably available in Florida. FPL has done additional work assessing renewable resources and has also recently conducted the 2007 Renewable RFP, described above. FPL's observations based on its own assessments, including consideration of the results of its 2007 Renewable RFP, are consistent with the FPSC/FDEP Renewable Assessment.

Q. What definition of renewable resources does Florida use?

A. The FPSC/FDEP Renewable Assessment acknowledged that the definition of renewable resources varies from state to state. This makes sense because different renewable resources are available in various states. The FPSC/FDEP Renewable Assessment used a definition of renewable resources consistent

with the present definition of renewable energy stated in the Florida Statutes. Section 366.91, Florida Statutes, defines renewable energy as follows:

> ...electrical energy produced from a method that uses one or more of the following fuels or energy sources: hydrogen produced from sources other than fossil fuels, biomass, solar energy, geothermal energy, wind energy, ocean energy, and hydroelectric power. The term includes the alternative energy resource, waste heat, from sulfuric acid manufacturing operations.

Q. Using the definition in Section 366.91, Florida Statutes, of renewable energy, discussed above, what did the FPSC/FDEP Renewable Assessment conclude concerning aggregate availability of renewable energy in Florida?

A. The FPSC/FDEP Renewable Assessment concluded that as of 2003 Florida as a whole had approximately 680 MW of potential renewable capacity, exclusive of waste heat from sulfuric acid manufacturing operations, which the Renewable Assessment estimated as providing an additional 340 MW of potential capacity from renewable resources. The FPSC/FDEP Renewable Assessment also reported, based on anecdotal information, an estimate of 651 MW of "potential and commercially feasible, near term, and new renewable capacity that could be developed in Florida."

The FPSC/FDEP Renewable Assessment noted that nationally the vast majority of renewable energy is provided by hydroelectric sources, of which Florida has very little (about 50 MW in the Panhandle of the state, outside of FPL's service territory, the last electric generator of which was built in 1957). The FPSC/FDEP Renewable Assessment observed that Florida's renewable electric production is largely derived from municipal solid waste-to-energy, biomass materials such as agricultural waste product and wood residues used as fuel in boilers, and waste heat recovered from industrial manufacturing processes. The FPSC/FDEP Renewable Assessment also noted that there are a few photovoltaic installations but that their total generating capacity is not significant because most of these are only a few kilowatts in size. Feasible and commercially mature technologies identified in the FPSC/FDEP Renewable Assessment were biomass derived fuels, municipal solid waste (MSW), landfill and digester gas, hydroelectric, solar PV and cogeneration.

Q. What are some of the major differences between the many types of renewable resources that the FPSC/FDEP Renewable Assessment considered?

A. The FPSC/FDEP Renewable Assessment noted that significant differences exist between renewable technologies in the areas of cost-effectiveness, environmental impact, developmental stage and how they are dispatched as part of an integrated supply system. For example, the report stated as follows:

Cost – effectiveness: Renewable technologies often require significant capital to develop, construct and in many cases operate. This higher capital cost is often offset by lower fuel costs depending on the technology. The lifecycle cost of energy provided must also consider the overall amount of generation that the technology will provide, making low capacity factor technologies less cost-effective.

Environmental Impact: Renewable technologies vary widely in the magnitude and type of environmental impact they may have. Some renewable technologies have poor emission profiles while others have no emissions. However, no emissions does not mean no environmental impact as these technologies require significant land resources for unit placement as well as transmission and distribution infrastructure to deliver widely distributed smaller generation to load centers.

Developmental Stage: Renewable technologies vary widely in the level of technical maturity. For example, wind technology is relatively mature in contrast to emerging technologies such as ocean current energy. Even technologies such as solar PV require significant technological improvement to reduce costs.

System Dispatch: Some renewable technologies are dependent on a natural resource that is intermittent in availability. This presents challenges to system

operators who must have adequate backup generation and spinning reserves to accommodate generation that fluctuates with, for example, wind speed or cloud cover.

Q. Is FPL's view of the availability of renewable energy resources in Florida generally consistent with the FPSC Renewable Assessment that you have described?

A. Yes. Without understating the importance of renewable energy for Florida, nor FPL's interest in utilizing and promoting the use of such resources, FPL's view is that the FPSC/FDEP Renewable Assessment's conclusions remain correct in terms of the comparatively small potential contribution of renewable energy to overall electricity production in Florida. The resources recognized as reasonably available in the FPSC/FDEP's Renewable Assessment on a commercial basis were modest.

Q. How does Florida's renewable energy production compare with the renewable energy production of other states?

A. One needs to recall that the definition of renewable energy varies from state to state. That said, based upon the most recent DOE data released in July 2007, Florida ranked fourteenth in the nation in renewable energy production, despite the fact that Florida does not have the abundant hydroelectric, geothermal and wind resources that higher ranking states have. A chart showing Florida's comparative renewable energy production is attached to my direct testimony as Exhibit HGM-1.

Q. Does Exhibit HGM-1 fairly represent how well Florida is doing overall among states in terms of renewable energy production?

A. No. It is not fair to compare Florida, which has no major rivers that can be dammed and used to generate electricity, with states like Washington, California, Oregon and New York, which all have electricity produced by using dams and hydroelectric generators. In fact, nearly every state that ranked ahead of Florida for renewable energy production, as shown in the most recently issued DOE data, includes extensive use of conventional hydroelectric power. Some states have other resources that Florida simply does not have. As just one example, California utilizes geothermal energy for electricity production.

Q. How does Florida's renewable energy production compare with other states when one takes into account the renewable resources available in-state?

A. A more apples-to-apples comparison shows that Florida is a very successful state in renewable energy production, taking into account available resources. For example, review of the DOE information released in July 2007 shows that Florida ranks second in the nation when one takes into account that Florida does not have the abundant hydroelectric and geothermal resources that the highest ranking states have. Florida has substantially developed its available waste-to-energy, landfill gas, wood, wood waste and other biomass resources. A chart showing Florida's comparative renewable energy production taking into consideration available in-state resources is attached as Exhibit HGM-2.

Q. In addition to the availability of different renewable resources, are there other factors that should be considered in assessing the development of renewable energy resources compared with other energy resources?

A. Yes. There are many important factors to consider, but among the most important is cost, which translates into the price paid by customers. Some renewable resources can be used to produce electricity at costs comparable to other generation, and these resources are the ones that have been most developed. Others can be used to produce electricity but at a higher cost in comparison with other generation, and this factor along with availability of the resource is important in determining the economic viability of a specific technology. For example, conventional hydropower is both renewable and provides very low-cost electricity where it is available. In contrast, the cost of electricity from solar PV is high where there is a great deal of solar energy available.

Q. Please comment on wind as a potential renewable resource in Florida.

A. For several years, FPL has been diligently seeking sites in Florida with wind speeds sufficient to provide net positive generation, and is presently working to develop locations at which the Company can install wind turbine generators. It should be also noted that in locations where wind speed is sufficient for some turbine generators to be installed, that there are other barriers to development. For example, as I previously discussed, FPL's siting efforts in Florida have encountered opposition to installing wind turbine generators based on aesthetic, wildlife preservation and other concerns.

Wind turbine generators can only generate electricity when there is sufficient wind to turn the turbine blades and the generator, producing power. Attached to my testimony as Exhibit HGM-3 is a National Renewable Energy Laboratory (NREL) map showing wind resource potential in the United States. Looking at the map, one sees that Florida has very little wind resource, in contrast to California and areas like West Texas, or the upper Midwest/Great Plains states and portions of the Northeast – all areas where a great deal of U.S. wind development has been successfully implemented. The velocity and consistency of wind in Florida are such as to produce little reliable power and a low capacity factor. Capacity factor is a percentage calculated by dividing how much electricity a generator produces annually compared with how much would be produced if the generator were to operate all of the time during the year (i.e., if the wind were to blow constantly at the wind generator's electric output rating speed at all times and the generator was always available, then the capacity factor would be 100%). This is important because the economic efficiency of wind generation depends very much upon the capacity factor at which wind turbine generators operate.

Capacity factor is also important to consider when comparing wind generation with other kinds of generation that can be installed in Florida. For example, a Florida wind turbine generator might achieve a capacity factor of 15%, while a Florida nuclear plant might achieve a capacity factor of more than 90%. This means that for any assumed installed capacity, the nuclear base load

technology would produce six times the amount of energy as the wind technology.

Also in contrast with a base load generating resource, wind energy provides intermittent electric energy and is not a dependable source of electrical capacity, meaning that wind generation cannot be counted on to provide electricity upon demand when customers require it.

Q. Has FPL commissioned any special studies/reports of wind resources available in Florida?

A. Yes. FPL has been assessing the commercial wind energy potential of the State of Florida for several years. In this regard, FPL commissioned three wind studies of the State of Florida. These studies are much more detailed than information commonly available through government and general industry sources. The first study addressed the state of Florida as a whole. Two more recent studies focused on the Southwest and Northeast Florida geographical regions. The studies all had similar overall findings:

- Florida's wind resource is minimally adequate to produce some power along portions of its coast;
- The wind resources decline significantly inland; and
- Florida's wind resource is seasonal, and is more productive during winter (October through March).

Q. What conclusions does FPL draw from the wind studies from a wind energy development perspective?

A. From these studies, and FPL's other work assessing possible wind energy development in Florida, FPL concludes that (i) the wind energy that may be subject to development is on or near Florida's beaches (including possible offshore wind); and (ii) while wind power might offset some winter energy use, it is not meaningfully available during FPL's Summer load peak and, therefore, cannot contribute to meeting FPL's reserve margin on a reliable basis. As discussed in FPL witness Sim's testimony, FPL's Summer reserve margin is the primary driver of FPL's resource needs.

Q. Please comment on solar energy as a potential renewable resource.

A. Solar PV and large scale solar thermal energy are comparatively expensive sources of electricity. Solar energy is intermittent in nature, as it is dependent on time of day and weather conditions. Solar energy provides intermittent electric energy and is not a dependable source of electrical capacity, meaning that solar energy plants cannot be counted on to provide electricity upon demand when customers require it, unless electricity storage is integrated into the solar facility.

Q. Where is the best solar resource in the U.S.?

A. The best U.S. solar resource is in deserts where there is a great deal of sunlight and heat, low humidity and little cloud cover. An example of this is California's Mojave Desert, where insolation (the amount of solar energy) is among the best available in the United States. Since 1990, FPL's sister company, FPL Energy, has operated the world's largest solar power plant there. The Solar Energy Generating Systems (SEGS) facility in the Mojave

Desert has over 900,000 mirrors and covers 2,400 acres (nearly 10 square kilometers), with just over 300 MW of installed capacity using parabolic trough solar thermal technology and natural gas. Natural gas is necessary in order that the SEGS plant can be relied upon to provide capacity as well as energy. This illustrates that without natural gas or some other supplementary fuel source, solar power plants cannot provide capacity to serve customers when customers require service.

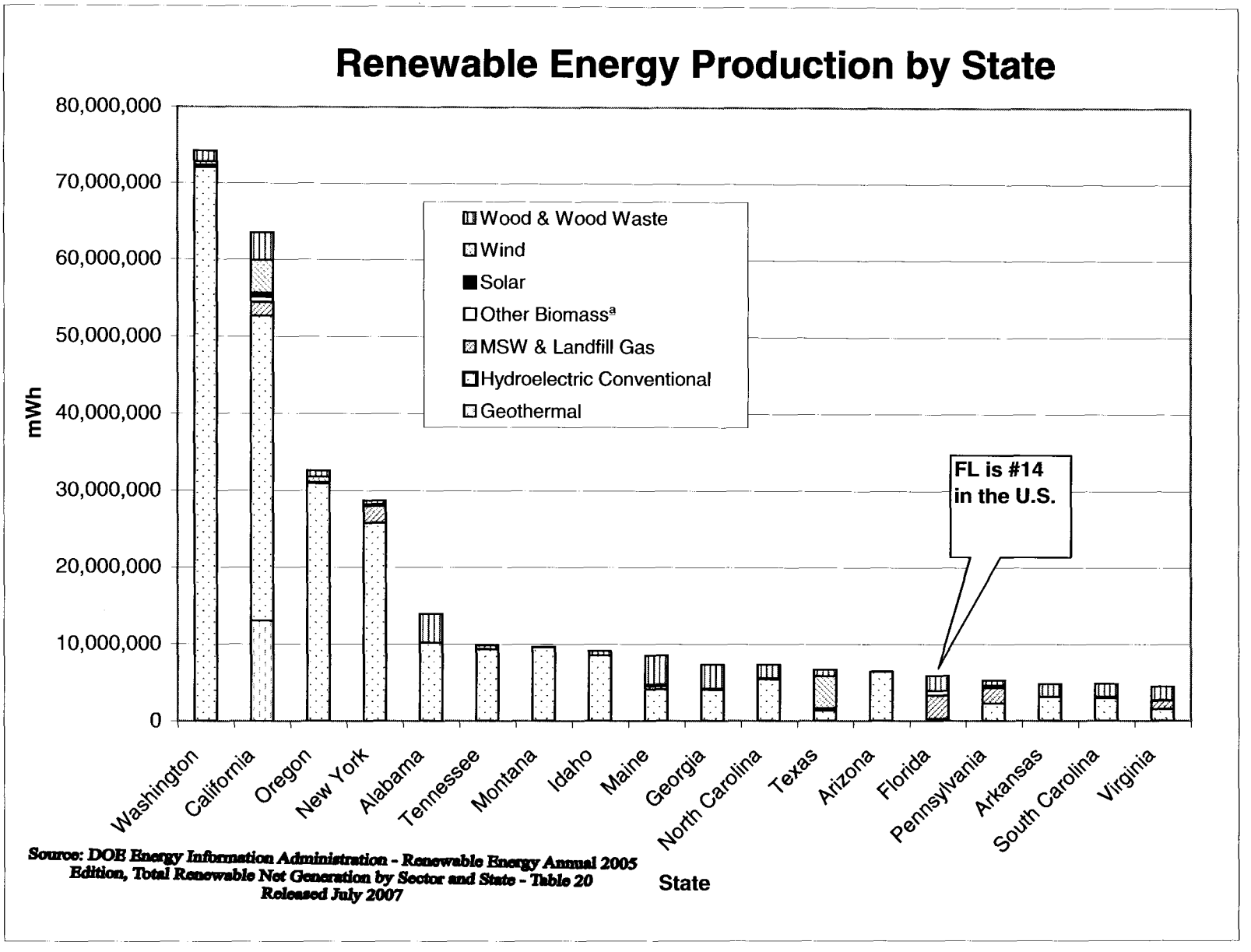
Q. Please describe some of the considerations in utilizing solar energy in Florida.

A. Attached to my testimony as Exhibit HGM-4 is an NREL map showing United States solar energy potential. Looking at the map, one can see that Florida's solar energy potential is not as robust as that in the Mojave Desert where the SEGS facility is located. FPL is commissioning a study to better evaluate the potential solar resource in FPL's service territory. Development of utility scale solar projects in Florida requires extensive land resources, estimated to be in the range of 10 acres/MW. This means that a Florida developer for a facility comparable to the SEGS facility (assuming adequate insolation existed to support a large solar thermal facility), would need to own or acquire the right to use about 3,500 acres. It should be kept in mind that the largest PV installation in the United States is less than 18 MW. Distributed installations of rooftop solar PV generation is feasible, but due to low capacity factor, high cost, and intermittent availability, it is not a substitute for high capacity factor, high reliability base load generation.

Because solar power is an intermittent resource with a low capacity factor, many more MW of solar would need to be installed to equate with the energy production of reliable base load electric generating resources.

Q. Does this conclude your direct testimony?

A. Yes.



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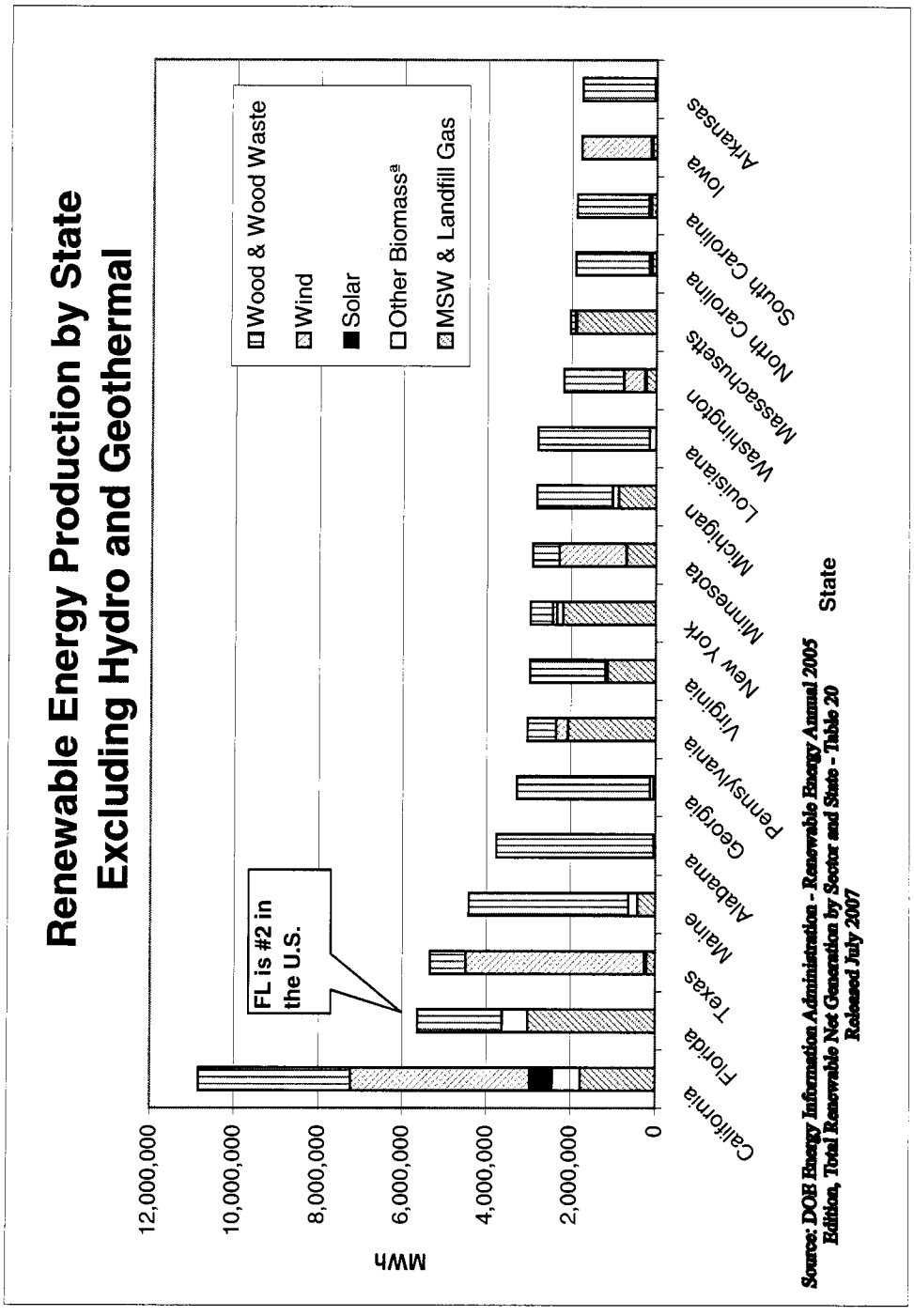
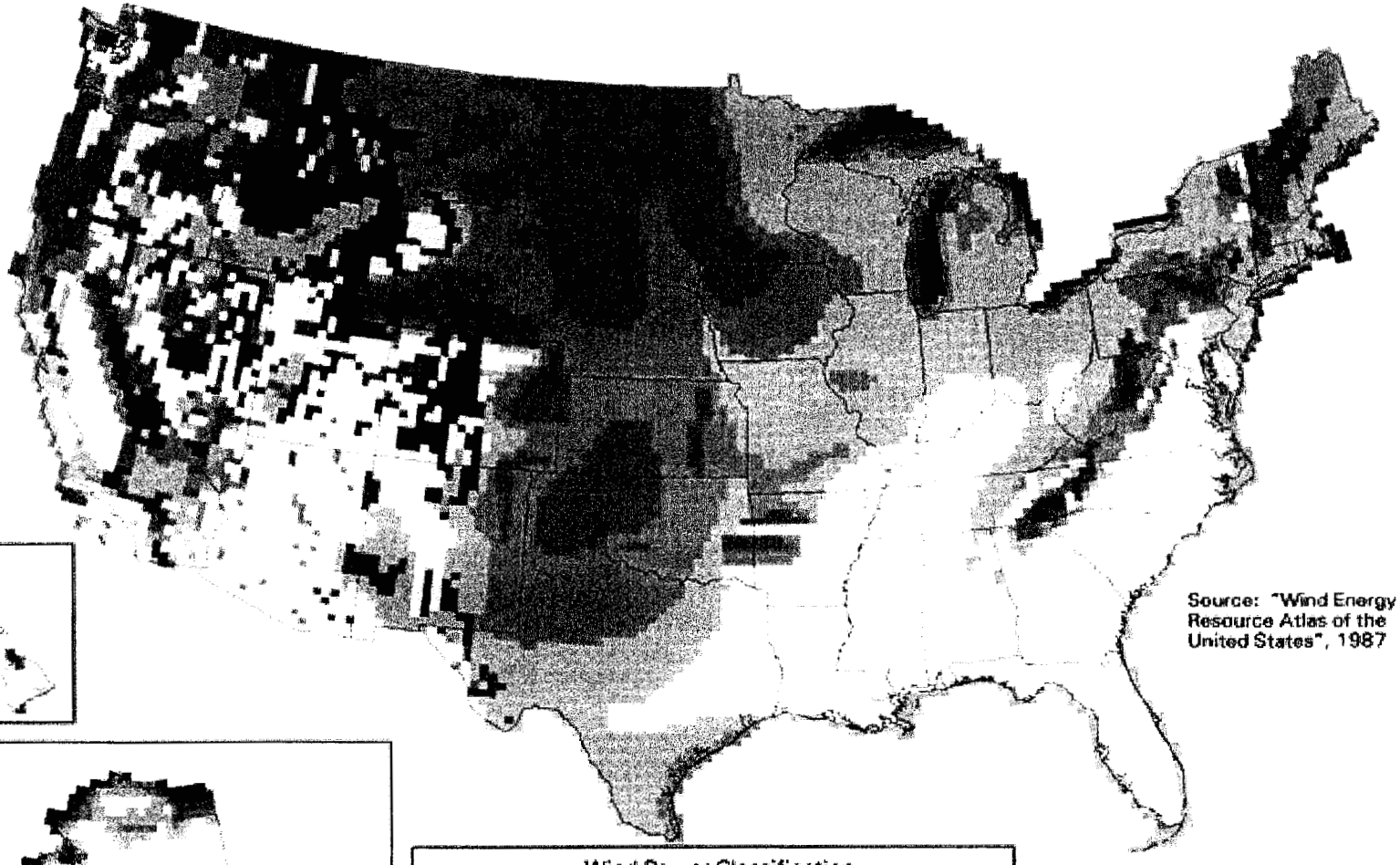
Renewables By State
Excluding Hydro and Geothermal
Exhibit HGM-2, Page 1 of 1



United States - Wind Resource Map



Source: "Wind Energy Resource Atlas of the United States", 1987

Wind Power Classification

Wind Power Class	Resource Potential	Wind Power Density at 50 m W/m²	Wind Speed[a] at 50 m m/s	Wind Speed[a] at 50 m mph
2	Marginal	200 - 300	5.6 - 6.4	12.5 - 14.3
3	Fair	300 - 400	6.4 - 7.0	14.3 - 15.7
4	Good	400 - 500	7.0 - 7.5	15.7 - 16.8
5	Excellent	500 - 600	7.5 - 8.0	16.8 - 17.9
6	Outstanding	600 - 800	8.0 - 8.8	17.9 - 19.7
7	Superb	800 - 1600	8.8 - 11.1	19.7 - 24.8

[a] Wind speeds are based on a Weibull k value of 2.0

U.S. Department of Energy
National Renewable Energy Laboratory

NREL

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NREL United States Classes of Wind Power Density Map
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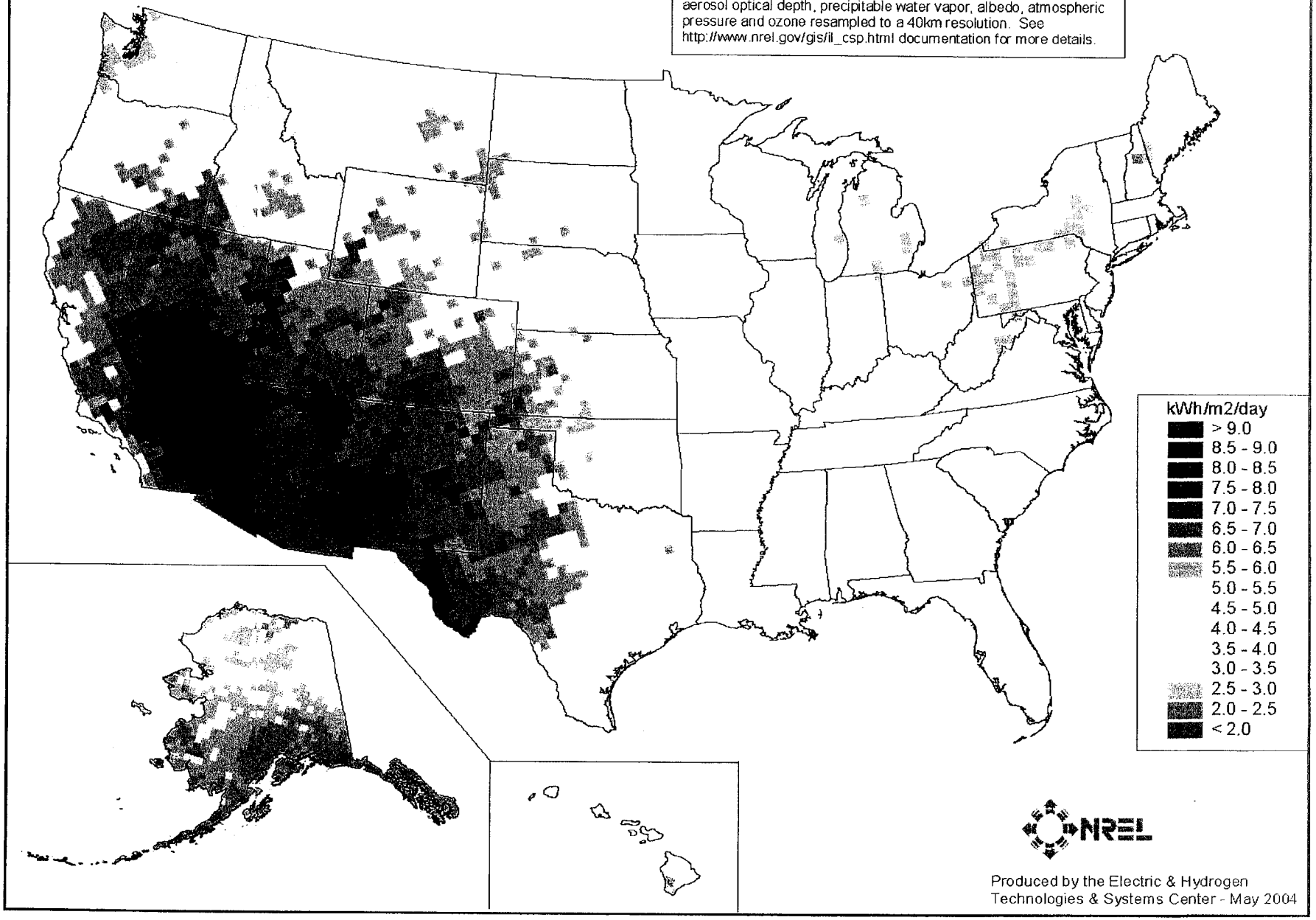
Direct Normall Solar Radiation (Two-Axis Tracking Concentrator)

Annual

Model estimates of monthly average daily total radiation using inputs derived from satellite and/or surface observations of cloud cover, aerosol optical depth, precipitable water vapor, albedo, atmospheric pressure and ozone resampled to a 40km resolution. See http://www.nrel.gov/gis/il_csp.html documentation for more details.



NREL

Produced by the Electric & Hydrogen Technologies & Systems Center - May 2004

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NREL United States Solar Energy Potential Map
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