The Global Nuclear Energy Partnership

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Greater Energy Security in a Safer, Cleaner World

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Paducah Uranium Plant Asset Utilization (PUPAU) Task Force

What is the Global Nuclear Energy Partnership?

The Global Nuclear Energy Partnership (GNEP) initiative seeks to develop worldwide consensus on enabling expanded use of economical, carbon-free nuclear energy to meet growing electricity demand. This will use a nuclear fuel cycle that enhances energy security, while promoting non-proliferation.

DOE Plans to Develop Two Types of GNEP Fuel Cycle Facilities

- The **Consolidated Fuel Treatment Center (CFTC)** will reprocess Spent Nuclear Fuel (SNF) to recover valuable products such as uranium for reuse as fuel
- Sodium cooled fast reactors (i.e. the **Advanced Burner Reactor – ABR**) will be used to consume transuranics such as Plutonium and generate electricity
- DOE is also planning to locate an Advanced Fuel Cycle Facility (AFCF) at one of the National Laboratories to support technology development

What are the benefits of the GNEP?

- **Reduces dependence on imported fossil fuels (oil and coal)**
- **Provides abundant energy without generating carbon emissions or greenhouse gases**
- **Recycles spent nuclear fuel (SNF) to reduce waste and curtail proliferation concerns**
- **Safely and securely enables developing nations to use nuclear power to meet energy needs**
- **Assures maximum energy recovery from still-valuable SNF (over 90% of the uranium in SNF is recoverable)**

What is the current state of nuclear energy in the U.S.?

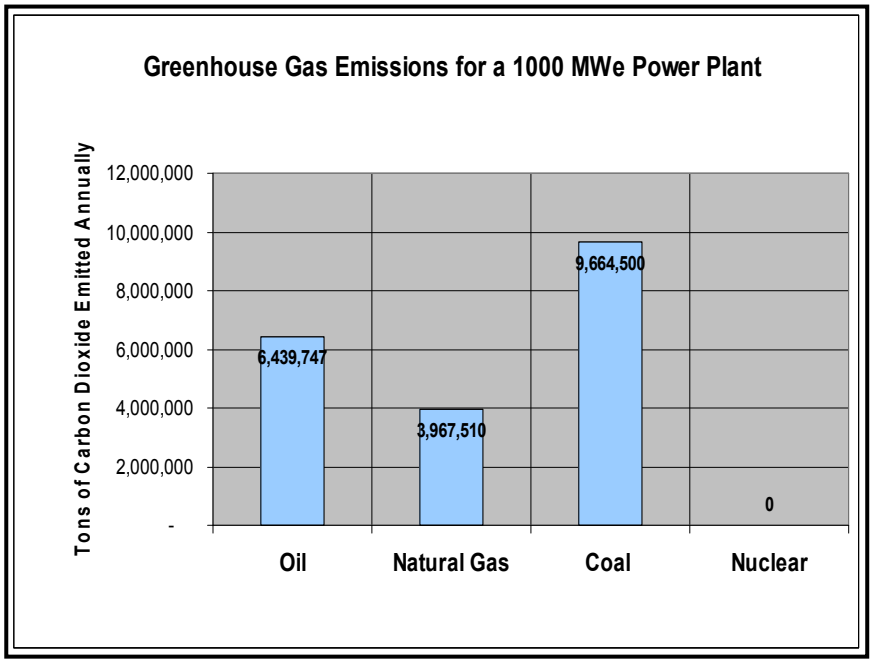
The United States gets about 20% of its electricity from 104 nuclear energy generating units around the nation.

These states are leaders in the percentage of electricity they get from nuclear:

- Vermont 72%
- South Carolina 52%
- New Jersey 51%
- Illinois 48%

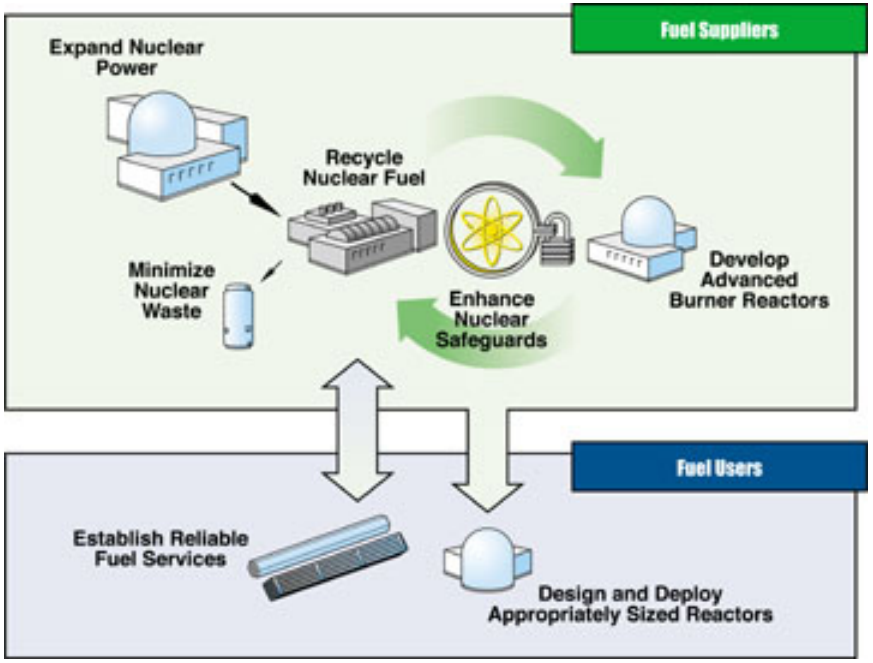
How does nuclear energy compare to fossil fuel use?

- The amount of electricity generated by a 1,000-MWe nuclear reactor at a 90% capacity factor in one year is 7.9 billion KWh.
- This is enough power to supply electricity for 740,000 households annually (while producing no greenhouse gases).
- The same amount of electricity generated by other fuel sources, would require:
  - Oil - 13.7 million barrels (producing over 6.4 million tons of greenhouse gases)*
  - Coal - 3.4 million tons (producing over 9.6 million tons of greenhouse gases)
  - Natural Gas - 65.8 billion cubic feet (producing almost 4 million tons of greenhouse gases)



* Based on average conversion rates from the Energy Information Administration

Why is GNEP a reliable fuel service model?



- Expands use of nuclear energy while preventing the spread of sensitive fuel cycle technology that could be used in the manufacture of weapons
- Fuel suppliers (e.g. the United States) – will operate both nuclear power plants and fuel recycle facilities
- Fuel users – will operate only power reactors using fuel leased from and returned to the suppliers

Preparing for our future …

What does the Global Nuclear Energy Partnership (GNEP) offer Paducah and our entire region?

What is the potential economic impact on our region?

Projected Construction Costs	*$12 to $16 Billion*
Construction Jobs:	5,000
Permanent Jobs:	1,000
Projected Regional Annual Economic Impact	*$140.7M**
McCracken:	$84,300,000
Ballard:	$14,200,000
Graves:	$12,600,000
Massac:	$ 8,500,000
Marshall:	$ 8,500,000
All Others:	$12,600,000

* Includes: payroll, charitable contributions, business memberships, procurement dollars, and tax payments

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Why was the Paducah Uranium Plant Asset Utilization (PUPAU) Task Force established?

The task force is chartered to:

… show our state and federally elected officials that the community supports the use of the Paducah Gaseous Diffusion Plant (PGDP) site for the location of facilities that are complementary to the site.

The task force focus is to:

- Maximize use of the the existing operational, cleanup and recreational activities at the site
- Explore and promote new missions for the site, both short and long term, that will fully use site assets
- Get support at the national, state and community level for the task force's recommendations

Paducah Uranium Plant Asset Utilization Task Force Members

- **Co-chairs:**
  - Van Newberry - McCracken County Judge Executive
  - Bill Paxton – Mayor, City of Paducah
- **Task Force Members:**
  - Jimmy Hodges, former DOE Site Manager
  - Howard Pulley, former PGDP General Manager
  - Steve Penrod, Current United States Enrichment Corporation (USEC) General Manager
  - Charlie Martin, Chairman of the Kentucky Fish and Wildlife Commission
  - Jim Zumwalt, Paducah City Manager
  - Henry Hodges, Executive Director of the Purchase Area Development Office
  - Ray Dailey, Director of Environmental Affairs, New Page

Time line of the Global Nuclear Energy Partnership (GNEP) events

- **January 2006 –** President announces GNEP initiative and Paducah Uranium Plant Asset Utilization (PUPAU) Task Force established
- **February 2006 –** Administration requests $250M for FY-2007
- **March 2006 –** U.S. Department of Energy (DOE) seeks interest from candidate sites
- **May 2006 –** DOE amends siting to include requirement for interim process storage of commercial spent nuclear fuel
- **June 2006 –** Paducah Task Force selects CH2M Hill as corporate partner
- **September 2006 –** Task Force submits proposal for grant to study site
- **September 2006** – DOE receives Expressions of Interest from Industry for the GNEP Consolidated Fuel Treatment Center (CFTC) and Advanced Burner Reactor (ABR)
- **January 2007 –** Site study grants awarded
- **February 2007** - Administration requests $405M for FY-2008
- **March-April 2007 –** Community outreach begins - information workshops scheduled; web site provided for informational updates
- **May 1, 2007 –** Paducah site study to DOE
- **June 2008** – Decision package including the GNEP Programmatic Environmental Impact Statement (PEIS), siting studies from 11 sites and technology proposals due to the Secretary of Energy

What are the next steps?

- **DOE GNEP Programmatic Environmental Impact Statement (PEIS) scoping meeting held - March 6, 2007**
- **PUPAU public information workshops on siting study will be held in March and April to inform and educate interested citizens**
- **PUPAU Task Force members and related personnel will be available for civic club presentations and media interviews**
- **Site study completed May 1, 2007**
- **DOE will make final decisions on timing, siting and footprint for GNEP in 2008-2009**

Questions?

Is the PGDP site secure enough and the infrastructure adequate for such a program?

- The PGDP has a "state of the art" security system and experienced security personnel.
  - The global partnership requires Nuclear Regulatory Commission (NRC) and DOE security compliance – both are unique aspects of the PGDP site.
  - PGDP has a "state of the art" security program with experienced personnel and has dual compliance with NRC requirements and DOE directives.
- The required utilities and support systems already exist.
  - The GNEP demonstration site will include a production scale fuel reprocessing plant (the CFTC at 3000 tons / year throughput). Such a plant requires reliable and adequately sized utility systems (power distribution, steam, air, water, sanitary sewer) and support facilities (shops, maintenance, administration, receiving, storage, etc). These are already available at the PGDP.

Does the PGDP reservation have the necessary site conditions to be considered?

- **Yes, the PGDP site has been carefully studied and is well characterized**
  - **The site has been extensively sampled and characterized to develop a comprehensive understanding of the soils, surface water, groundwater and air.**
  - **The socioeconomic, demographic and environmental justice impacts of the area are well understood.**
  - **The ecological and cultural resources have been extensively studied.**
  - **Past geological characterization data combined with recent seismic studies and advances in earthquake engineering gives us the understanding necessary to design, build and operate safe, low risk GNEP facilities at the PGDP site.**
  - **The current siting study focuses on a 580-acre subset of the PGDP site to identify any additional information that may be needed.**

What is DOE's track record in …?

- **Nuclear Operations**
  - ❖ **The GNEP requires a well-trained, proficient nuclear operations team with experience in radiological conduct of operations.**
  - ✓ **The Paducah area has ~2000 trained nuclear workers supporting both commercial and DOE nuclear programs.**
  - ✓ **The Paducah Gaseous Diffusion Plant (PGDP) has been recognized as one of the best manufacturing facilities in the United States by *Industry Week* – in the "Best Plant Winner" category.**
- **International Expertise**
  - ❖ **The GNEP program will require international cooperation to succeed.**
  - ✓ **Paducah is uniquely qualified to support this vital aspect of the GNEP through the experience gained from the DOE/USEC Megatons to Megawatts program.**
- **Community Support**
  - ❖ **The siting of the GNEP facilities will be directly dependent upon the favorable reception of the host community.**
  - ✓ **The performance of the PGDP is favorably viewed by the local community.**
  - ✓ **The PGDP has been a primary employer in the region and a good corporate citizen over the past 50 years.**

Why select Paducah for the GNEP?

- **How does the global nuclear partnership fit Paducah and the region's needs?**
  - **The existing enrichment mission at the Paducah Gaseous Diffusion Plant (PGDP) is ending as GNEP begins.**
  - **GNEP provides an opportunity to reassign site personnel that are experienced in nuclear operations, maintenance and engineering.**
  - **The PDGP provides access to valuable and unique fuel reprocessing and spent nuclear fuel handling expertise.**
- **How does Paducah and the region fit the global nuclear partnership needs?**
  - **The PGDP provides a centralized location and that reduces transportation risk and cost.**
  - **The PGDP has the capability to host interim process storage of commercial SNF.**
  - **The PGDP has international experience with "Megatons to Megawatts."**
  - **The PGDP has established Nuclear Regulatory Commission and Department of Energy infrastructure, systems and facilities.**
  - **Paducah has strong community and political support for facilities with nuclear missions.**