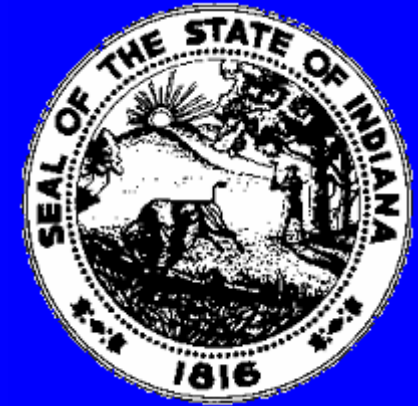
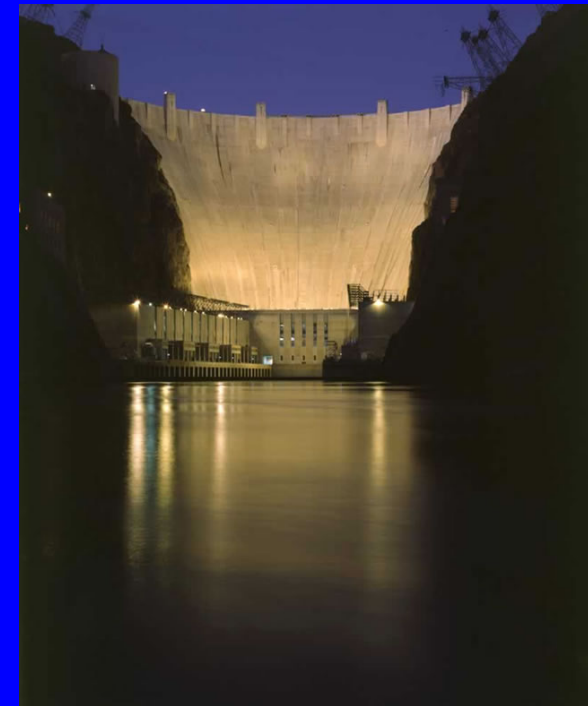


Indiana Utility Regulatory Commission



Regulatory Treatment of Hydro Resources

Curt Gassert
September 19, 2007





Hydro Power Facts:

- Approximately 20% Of The World's Electricity Supply Is Generated By Hydropower
- The United States Is The Second Largest Hydropower Producer In The World
- In The United States, 10% Of The Nation's Electricity Is Produced By Hydropower
- Hydropower Is Generated At Only 3% Of The Nation's 80,000 Dams

Information from Foundation for Water & Energy Education Website.

Hydro Power Facts (Cont'd):



- United States Hydro Power Is Concentrated In The Northwest States
- Up To 80% Of Electricity Is Hydro In The Northwest
- About 160 Hydroelectric Plants In The Northwest Region
- Grand Coulee Dam Located In Washington State

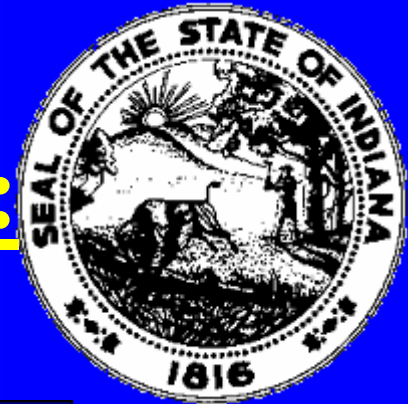
Information from Foundation for Water & Energy Education website.

Hydro Power Facts (Cont'd):

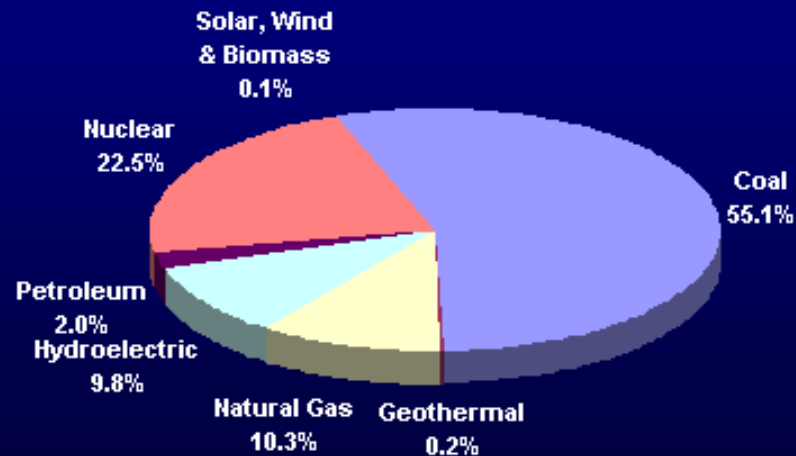
Grand Coulee Dam



Hydro Power Facts (Cont'd):



U.S. Electric Utility Net Generation of Electricity



Source: Wisconsin Valley Improvement Company website "Facts About Hydropower."

Indiana Hydro Power



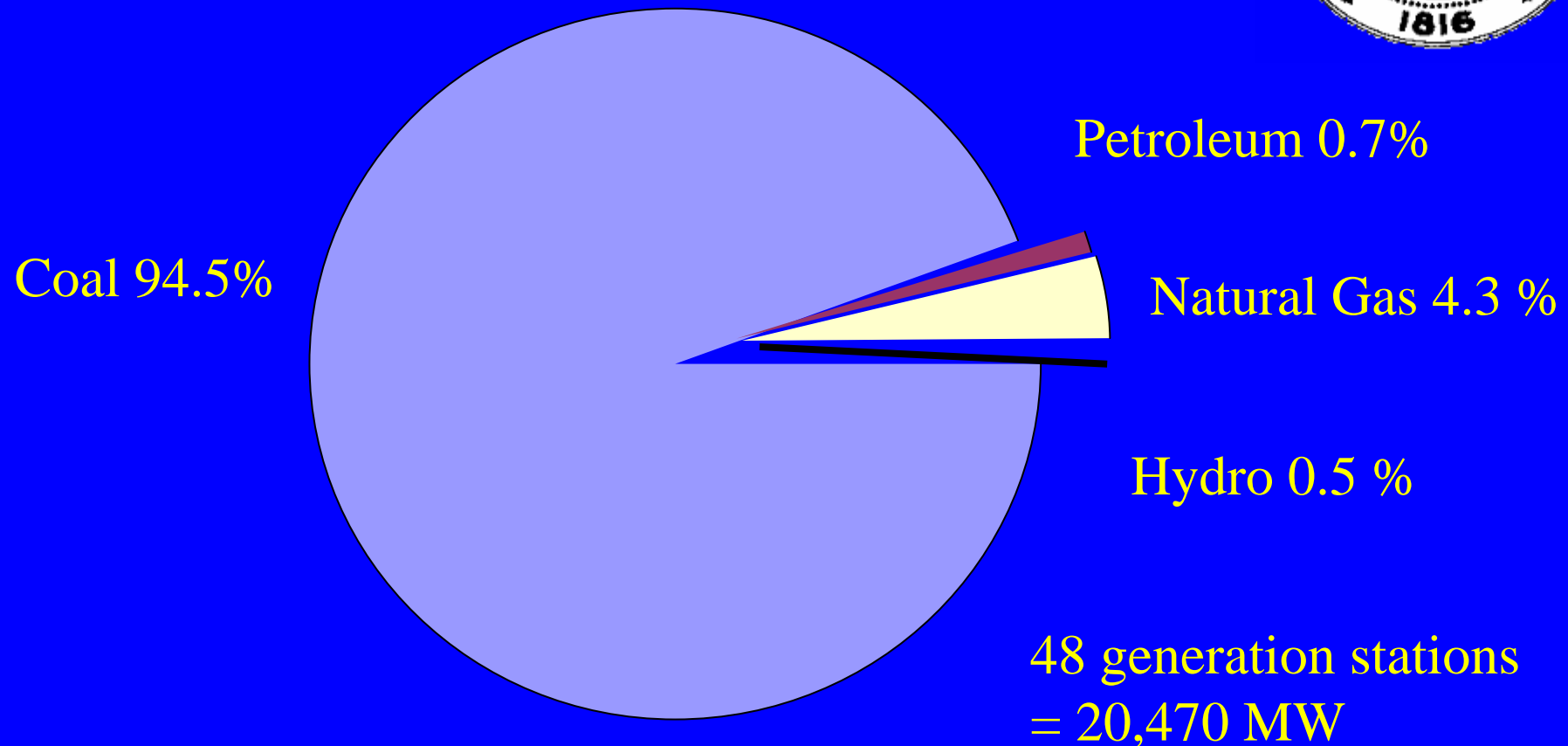
- Three Regulated Utilities With Nine Hydro Plants
- Combined Generating Capacity of 103 Megawatts
- Duke Energy's Markland Dam Hydro Plant Is Largest Rated At 65 Megawatts

Indiana Hydro Power



Comparison of Generation Fuel Mix Current and Forecasted			
	Indiana 2007	Indiana 2015	National 2015
Coal	69.2%	67.0%	34.7%
Natural Gas	20.6%	24.6%	30.6%
Oil	1.4%	1.1%	9.7%
Renewables	0.0%	0.3%	0.1%
Pumped Storage	0.0%	0.0%	2.3%
Nuclear	8.5%	6.8%	11.1%
Hydro	0.3%	0.2%	11.5%
	100.0%	100.0%	100.0%
Note: Percentages shown are percent of installed capacity (MW).			

Generation by Fuel Type In Indiana



Indiana Hydro Power



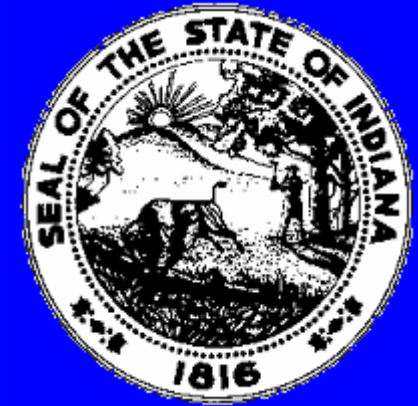
Indiana Hydro Resources

	Markland	Oakdale	Norway	Berrien Springs*	Buchanan*	Constantine*	Elkhart	Mottville*	Twin Brach
	Duke	NIPSCO	NIPSCO	I&M	I&M	I&M	I&M	I&M	I&M
Constructed	1967	1925	1923	1908	1919	1921	1913	1923	1904
Capacity kW	65,000	9,000	7,000	7,200	4,100	1,200	3,440	1,600	4,800
Net Peak Demand kW	79,000	0	7,000	7,000	3,000	1,000	4,000	2,000	5,000
Net Generation kWh	332,155,000	32,253,380	22,354,880	31,123,000	15,616,000	4,282,000	15,156,000	5,670,000	23,413,000
Cost of Plant	25,071,638	9,338,498	6,142,511	13,975,320	7,007,694	2,234,013	5,322,192	3,022,631	10,774,859
Cost per KW	385.72	1037.61	877.50	1941.02	1709.19	1861.68	1547.15	1889.14	2244.76
Production Expenses	820,208	91,346	76,954	294,738	174,753	62,168	150,191	76,404	205,698
Expenses per kWh	0.0025	0.0028	0.0034	0.0095	0.0112	0.0145	0.0099	0.0135	0.0088

- Located in Michigan
- Data From 2003 FERC Form 1s.

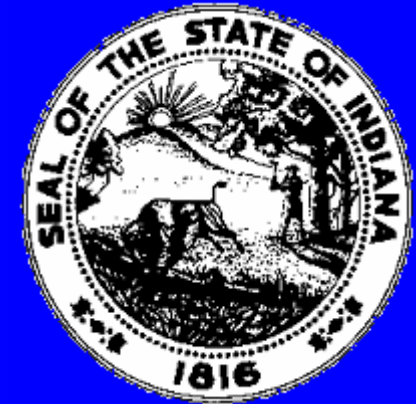
Indiana Hydro Power

Markland Dam



Indiana Hydro Power

...and a great location for catfish.



Challenges Operating Hydro



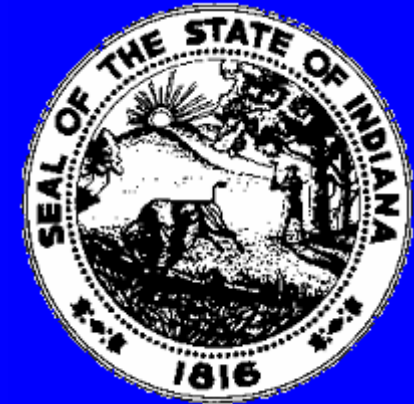
- Challenges Vary Depending On Location and Circumstances
- Markland Hydro Facility
 - Limited By The Amount Of Water Provided By The Corp of Engineers
 - Cannot Pool Water For Later Use During Peak Demands
 - Intakes Can Become Clogged With Debris

Challenges Operating Hydro



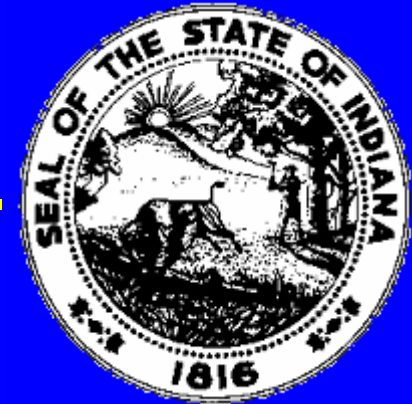
- Markland Hydro Facility Licensing
 - Relatively Easy To License Compared To Other Parts Of The Country
 - Only Four Licensing Issues
 1. Water Quality/Dissolved Oxygen
 2. Entrainment/Impingement
 3. Rare, Threatened & Endangered Species
 4. Recreation For Local Community

Performance Improvement



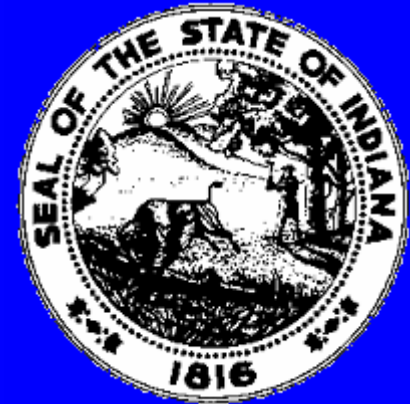
- Install More Efficient Technology Where Economically Feasible
 - Advanced Turbine Designs
 - Optimization System
 - Measures Flow And Head To Determine If More Efficient to Run Two Turbines At High Speed or Three Turbines At Low Speed
 - Clean Intakes As Needed
-

Incorporate New Generation Into Rates



- Rate Base/Rate Of Return Regulation
- Must File A Rate Case To Include New Generation In Rates
- Utility Should Provide Support In Rate Case To Justify Cost Incurred
- Support Includes Accounting Records, Cancelled Checks and Invoices

Incorporate New Generation Into Rates



- Plant Must Be “In-Service” and “Used and Useful” To Be Included In Rates
- Methods To Minimize Adverse Financial Consequences To Utilities:
 - Rule Provides Commission Order Within 10 Months And Update Rate Base Up To Final Hearing If Additional Workpapers Filed
 - Post-In-Service Allowance For Funds Used During Construction & Deferred Depreciation

Certificate of Need Law



- Before A Utility May Begin Construction Of A New Electric Power Plant, The Utility Must Obtain A Certificate Of Need from the IURC
- Certificate Shall Be Granted If The IURC:
 1. Made A Finding As To The Best Estimate Of Construction, Purchase Or Lease Costs

Certificate of Need Law



- Certificate Shall Be Granted if the IURC (Cont'd):
 2. Made A Finding That Either
 - (a) – The Proposed Plant is Consistent With The Commission's Plan For Expansion Of Electric Generating Capacity
 - (b) – The Proposed Plant Is Consistent With A Utility Specific Proposal Submitted Under Section 3(e) Of This Chapter And Approved Under Subsection.....
-

Certificate of Need Law



- Certificate Shall Be Granted if the IURC (Cont'd):
 3. Made A Finding That The Public Convenience And Necessity Require Or Will Require The Proposed Facility
 4. Made A Finding That The Facility Uses Indiana Coal, If It Is A Coal Consuming Facility, Or Is Justified In Using Non-Indiana Coal