Big Risk, Small Reward
Why States Should Say No to Power Authorities

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I. Executive Summary

Facing an array of big problems, and pondering a need for big government solutions, some state legislators and regulators have decided it may be time to create another big bureaucracy - the public power authority.

The challenges of increasing energy demand, rising infrastructure costs and environmental concerns are faced by many states.

Power authorities establish government control over energy markets through newly created agencies or publicly owned utilities. The notion is that only aggressive government oversight can ensure system reliability, advance renewable energy development and, most importantly, usher in a new era of low energy prices for consumers.

The approach is well-intentioned. Policymakers and office holders have been buffeted by a host of intractable challenges related to energy, the environment and the economy. They're under intense pressure to lower energy costs while simultaneously upgrading reliability and environmental measures, a nearly impossible task. One appeal of the power authority concept is that it brings this complex and politically thorny problem in-house. Government experts, under government authority, will administer a host of government-approved solutions.

This paper will argue, however, that the power authority approach, no matter how well-intentioned, is fraught with peril for energy consumers and regulators alike. It represents a flawed and tarnished model, one that has the great potential to increase the price of energy, stifle investment in renewable innovation and compromise system reliability. The financial burden energy customers face today would be dwarfed by the commitments associated with a state government agency overseeing all aspects of power generation construction, operation and transmission. History suggests these bureaucracies would be

A power authority that constructs, owns or operates generation resources should not be considered a silver bullets for states' energy infrastructure challenges.

inefficient, understaffed and poorly suited to managing real-time transactions in the global energy marketplace.

Unless they are severely limited in scope, power authorities do not represent a policy solution. This paper will illustrate they represent a high-stakes policy gamble…one policymakers would be wise to avoid.

II. Introduction

Power authorities, also known as "publicly owned utilities," are common in the United States. In 2005, there were more than 2,010 publicly owned utilities in operation, 883 cooperatives and 9 federal power agencies. While the ranks of these entities is nearly 3,000 strong, many are quite small. Approximately 1,400 serve communities with populations of 10,000 or fewer. There are far fewer investor-owned utilities – 217 in 2007 – but this model covers 68.8 percent of the US customer base, as opposed to 26.8 percent for power authorities..[1]

Several models for authorities exist:

(1) An energy efficiency utility (EEU) or power authority to facilitate the development and delivery of energy efficiency in the residential, commercial and industrial sectors, replacing current energy efficiency delivery mechanisms. This model relies upon Efficiency Vermont (EV) as a model.

(2) A more "traditional" state power authority based upon established federal models such as the Tennessee Valley Authority ("TVA"). This model would encompass a broad range of responsibilities, including potentially owning and/or operating generation and transmission infrastructure.

[1] See American Public Power Association, January 2007 newsletter, http://appanet.files.cms-plus.com/PDFs/PPFactSheet.pdf

(3) An authority focused on research and development of emerging technologies, such as the NYSERDA ("NYSERDA").

The remainder of this paper examines the question of whether a state should form a power authority.

The central question addressed by this paper is whether states should form power authorities.

- Section III defines a power authority and offers a comparison of major power authority types.
- Section IV addresses the question of why a state would consider forming a power authority.
- Section V addresses the question of whether power authorities are exempt from the challenges facing private companies.
- Sections VI and VII address whether power authorities have met their stated policy goals.

Detailed overviews of several existing power authorities can be found in the Appendix to this paper.

III. What is a Power Authority?

Originally, power authorities had limited scope and responsibilities. The first were used for rural electrification or to protect and develop large natural resources such as hydroelectric power. Over the years, however, the role of some agencies expanded, and they branched into new areas of the policy arena, such energy efficiency and renewable power. Others took on the full responsibility for owning and operating generating facilities and serving load.

Power authorities were originally developed for rural electrification or to develop large natural resources such as hydroelectric power.

The breadth of authority of state power authorities is quite divergent. Only 9.5 percent of electric generation in the United States, in megawatts, is owned by publicly owned utilities, 4 percent by cooperatives and 6.8 percent by federal power agencies.[2]

A variety of power authority models exist ranging form large federal power authorities such as the Tennessee Valley Authority to smaller public benefit corporations such as the New York State Energy Research and Development Agency.

The matrix on the following page provides a comparison of some features of these various types of power authorities. The Appendix to this paper provides an overview of existing power authorities.

[2] See http://www.appanet.org/files/PDFs/nameplate2005.pdf, American Public Power Association, 2007-2008 Annual Directory & Statistical Report compiled from Energy Information Administration Form EIA-861 and EIA-906/920 and EIA-860. Data does not include U.S. territories.

Comparison of Power Authority Types

	TYPE	CREATED	FUNDING	RESOURCES
Tennessee Valley Authority	Federal power authority	1933 to provide electric power to Tennessee Valley area	Self-funding[3]	30,000 MW of generation resources
New York Power Authority	State public benefit corporation	1931 to develop New York State hydropower resources	Bond sales to private investor	8,000 MW of generation resources
New York State Energy Research & Development Authority	State public benefit corporation	1925 to focus on energy R&D	Systems Benefit Charge	Does not own generation resources
Vermont Public Power Supply Authority	Joint action agency	1979 to buy & sell wholesale power	Through member municipalities	Owns & contracts for ~120 MW.
Efficiency Vermont	Non-profit	2005 to provide efficiency services	Charge on utility customer bills	Does not own generation, transmission or distribution resources

[3] Although self-funded since 1959, TVA still makes annual payments to the U.S. Treasury to pay back the U.S. government's initial financial investment.

IV. Why Form A Power Authority?

Although specific reasons may vary, the prime objective for forming a power authority typically has been to provide for electrification, develop natural resources, or fill a perceived gap in utility services or competitive market outcomes. Historically, policy makers have faced a basic question: how best to ensure that needed utility services are provided to customers in a reliable manner and at a reasonable price. The answer has generally taken one of two approaches – direct government services through an entity such as a power authority, or state regulation of private utility companies whether fully regulated or lightly regulated in competitive markets. Those that have taken the direct government approach have done so under the premise that the benefits would flow directly to the citizens. In the electricity supply business, customers would theoretically enjoy lower rates as the government-owned utility harnessed economies of scale and increased sales to greater numbers of people and businesses. This approach presumes that since government has no stockholders demanding dividend payments or returns on investment, savings could be simply passed through to citizens.

Supporters of power authorities contend that a governmental agency, with no stockholders, will be able to simply flow savings from not needing to turn a profit straight to the citizenry.

Some states believe they can better manage the energy needs of their constituents than private companies. Government often examines the barriers faced by the private sector and considers whether it can minimize those barriers for the public good or fulfill the role better than private entities that operate in a regulated scheme. One particular focus of late has been with respect to the ability to capture price benefits through long-term contracting. Another focus has been to seek to retain the benefits of local natural resources such as renewables for local consumers.

Other reasons that have been cited as the basis for forming a state public power authority

include: promotion of energy efficiency, development of renewable or other specific types of generation supply, economic development and job development

V. Are Public Authorities Truly Exempt from the Challenges Facing Private Entities?

While some state public power authorities have the benefit of having access to low-cost financing and bonds through guaranteed taxpayer backing, in all other respects they face the same challenges as private entities investing in the energy industry. Where a power authority is formed for limited purposes, for example to stimulate investment in areas such as energy efficiency, a power authority can have some benefits. Where a power authority is formed for larger purposes, such as building generation at a low cost, the risks are significant. It is questionable whether government can improve upon the private sector approach and it unquestionably saddles ratepayers with significant price risk.

The recent escalation in construction costs is a risk faced by both power authorities and private companies.

The recent escalation of construction costs in the power industry illustrates the risks inherent in building and/or contracting for new generation. Prices of materials needed to build generation plants have increased substantially, with some estimating that prices of materials have increased 25 – 30 percent over the last 18 months.[4] The effect is significant on developers. Duke Energy recently experienced the impact of these increases when constructing coal-fired generation in North Carolina. In 2005, Duke estimated that it would cost $2 billion to construct two coal-fired 800 MW generation plants. Eighteen months later, Duke increased the estimate to $3 billion. In early 2007, it was announced that Duke would build only one of the units at an estimated cost of $1.83 billion – an increase of more than 80 percent from the original estimate. Id. These price increases are impacting all generation types from nuclear to wind.

[4] Costs Surge For Building Power Plants, New York Times, Mathew Wald, July 10, 2007.

Other challenges faced by both private industry and potential power authorities include:

- *Portfolio management* – In order to be successful, a state power authority must properly manage its portfolio whether the portfolio is limited to energy efficiency or broader in scope to cover energy supply. State power authorities such as NYPA and LIPA must engage in full "portfolio management," which includes the full range of measures that a load-serving entity may employ to satisfy ever changing load-serving obligations in the most economical manner. Portfolio management may include hedging of congestion and fuel costs but it also includes other measures such as choosing the optimal sources for energy transactions to maximizing FTR values, choosing the most economic sources for energy and capacity purchases (while balancing the impacts of those choices on FTR values), and making the decisions for self-scheduling or bidding into markets of generating units. Actively managing a portfolio involves making a myriad of decisions in a dynamic market context and the exercise of judgment over many complex issues. It is not an activity that can be performed well or consistently by an organization without substantial resources, knowledge and experience and that participates in the market on a daily basis. Governmental agencies do not always have the necessary depth of resources to perform this function.

Players in the industry face a myriad of challenges including portfolio management, regulatory strategy, risk management, environmental concerns, long-term contracting questions, and risks associated with direct generation ownership.

- *Regulatory Strategy* - Power authorities do not operate in a vacuum. Just like private entities, power authorities are impacted by federal and regional energy policy and activities. Power authorities that provide traditional utility services such as LIPA and NYPA are active participants in regional power pools such as the NYISO and PJM and are active in legal and regulatory proceedings at the Federal Energy Regulatory Commission and Department of Energy. Managing these proceedings is resource intensive and expensive. Activities such as participation in RTO/ISO stakeholder meetings and the submittal of filings before regulatory agencies are additional responsibilities of full-fledged state public utility companies. The depth of resources necessary to fully and adequately staff these functions are significant.

- *Risk Management and the Assumption of Risks* – Value (price) of the portfolio is not the only consideration that must be managed. The risk (volatility) of the portfolio is an additional consideration. The predicted lowest cost mix of supply options may pose unacceptable volatility. The state agency (or the commission that oversees it) must identify and measure supply risks and then make a determination of the proper level of risks for ratepayers to assume. Again, this takes a significant amount of resources and significant expertise in risk management and energy markets.

- *Environmental challenges* – Any state power authority would be subject to the same environmental restrictions/requirements as private entities. To the extent a state power authority is used to develop new generation for example, it will need to address numerous federal and state environmental requirements. All new power plants whether owned by a private developer or a power authority would be subject to stringent air pollution

standards. There is also the challenge of quantifying the risk of federal legislation on emissions – these risks and challenges apply equally to private and public investors. Generation plants located in Regional Greenhouse Gas Initiative ("RGGI") states face the challenge of operating economically and meeting RGGI goals. Again, meeting these environmental challenges will take a significant amount of resources and expertise.

- *Long-term contracts* – Some power authority models focus on long-term contracts with suppliers to acquire "low-cost" supply. As history with PURPA contracts have illustrated, there is significant risk to entering into long-term contracts. Locking into a price based on inadequate information or poor market timing can lead to years of above-market prices and pain to consumers. Again the necessary amount of resources and expertise in risk management and energy markets to manage these contracts is significant.

- *Risk/Reward of Financing or Direct Ownership of Generating Resources.* Financing or direct ownership of generating resources can, in theory, result in lower costs to consumers. State agencies could have access to low cost capital and do not earn a return on investment. This option, however, also exposes ratepayers to an array of risks they can be insulated from under full service procurement models. Notably, financing or ownership of plants by a state agency would expose ratepayers to construction and operational risks. In the private sector, these risks are borne by stockholders. Ratepayers also assume the risk of stranding the asset at some remote future point after its construction if prices do not materialize as predicted. Finally, and perhaps most importantly, the impact of financing or direct ownership of generating facilities by a state agency on competitive markets must also be considered. If the state power authority constructs plants under this model, the willingness of the private sector to construct will likely be adversely affected. Any savings to consumers associated with the state-owned or state-financed plants may well be exceeded by the additional returns required by the private sector to invest. Again, managing this risk/reward equation will require a significant amount of resources with expert knowledge of the industry.

VI. Do Power Authorities Deliver What They Promise?

The appeal of a power authority structure is the premise that through government control – not private control – consumers will get a better deal. The rationale has been that without a profit motive and the need to show a profit to shareholders, a power authority could operate at less cost and return some of the savings to consumers. As states ponder the creation of a power authority, the question must be answered – have power authorities been a better deal for consumers?

Taking a closer look at the operation of existing power authorities, the answer to this question is no, power authorities have clearly not provided a "better deal". A report done in 2004 by the U.S. Government Accounting Office ("GAO") entitled, *Bonneville Power Authority: Better Management of BPA's Obligation to Provide Power is Needed to Control Future Costs,* illustrates this point by highlighting the many problems plaguing the BPA. As the GAO Report explained:

Bonneville Power Authority provides an example of a federal power authority fraught with financial problems, mismanagement of resources, and significant reliability and environmental concerns.

> BPA "has experienced significant financial problems over the past few years. BPA's core business of selling power lost more than $300 million each year in FY 2001 and 2002, primarily as a result of increased costs. As a result, its cash reserves of $811 million at the end of FY 2000 had fallen to $188 million by the end of FY 2002. In February 2003, BPA announced that it had an estimated 74 percent chance of missing its repayment of Treasury debt that year. These difficulties have necessitated increases totaling more than 40 percent in the rates BPA charges its customers for power since October 2001...BPA's financial condition has recently improved...However, BPA has stated its financial health is still far from robust, and BPA's ability to manage its costs and risks has come under scrutiny from customers and stakeholders."

The report went on to identify further issues with BPA's management, including poor oversight of its resources and environmental concerns. Regarding how it manages its capital investments, the GAO commented:

> "BPA's costs have increased because of prior underinvestment in reliability, capacity, and safety."

The Associated Press reported in 2007 some of the environmental impacts of BPA's mismanagement and detailed the difficult choice confronted by BPA management as a result of this mismanagement:

> "A federal judge has put the Bonneville Power Administration on notice that salmon conservation comes before regional power needs after learning that the BPA miscalculated energy demand and had to risk killing protected salmon in April. The problem occurred April 3 when the BPA, in a series of faulty calculations days earlier,

had sold power companies more electricity than it could draw from hydroelectric dams along the Columbia and Snake rivers. And Bonneville marketers couldn't buy enough back to cover the shortfall. Managers were faced with two choices: Adjust dam turbines to boost power, thrashing and possibly killing federally protected salmon heading downriver to the ocean; or cut off power people needed during a cold snap. Bonneville kept the power flowing."

Finally, federal power authorities such as BPA have faced significant reliability problems. A 1999 GAO study entitled, *Federal Power: Implications of Reduced Maintenance and Repair of Federal Hydropower Plants,* pointed out:

> "Hydropower plants run by the Army Corps of Engineers and the Bureau of Reclamation are generally less reliable in generating electricity than are nonfederal hydropower plants. These plants could not always obtain funding for maintenance and repairs when needed, and, as a result, the agencies postponed maintenance until the money was available. These delays caused frequent, extended outages and inconsistent plant performance."

Not only have federal power authorities such as BPA been fraught with mismanagement, financial troubles and environmental issues, state power authorities have not fared much better. A New York State Comptroller's Office Audit of the New York Power Authority in 2004 found that poor planning and major operational losses caused significant costs to the state. As the Audit stated:

The New York Power Authority provides an example of a state power authority characterized by poor planning, major operating losses, significant costs to the state, and challenging infrastructure decisions.

> "NYPA is expected to continue to lose money in its New York City and Westchester market, despite the financial advantages NYPA enjoys…if NYPA fails to manage its resources effectively, it will not be in a strong position to respond when needed in an emergency. NYPA lacks incentives to control waste and inefficiency. This audit is a red flag that NYPA is not managing these enormous public assets based on sound business practices…NYPA is a textbook case of an Authority adrift."

The audit went on to state that NYPA regularly failed to consider alternatives to generation self-build that would have resulted in dramatically lower costs. In conclusion the Audit stated that the combined additional costs due to NYPA's poor management and inaccurate cost estimate of several recent power projects totaled over $500 million.

NYPA offers a further example of the challenges of having a power authority construct, own or operate generation assets. In recent years, NYPA has constructed over 900 MW of new generation in the New York City area. In 2001, NYPA installed 11 small peaking units totaling approximately 400 MW in or near New York City (the Power Now! project). In December 2005, NYPA completed construction of a 500 MW combined cycle facility in Queens (the new Palette project), approval for which had been given by NYPA's Board in 1999. Audits of both of these projects have been conducted by the New York State Comptroller, and documented large cost overruns as well as failure to consider more cost effective alternatives. In an audit issued in May 2004[5] the Comptroller found:

> "Before proceeding with its plans to build and operate the new plant, NYPA did not evaluate a number of alternatives commonly considered by utilities contemplating large construction projects. While additional power plants are badly needed in the New York City area, one or more of the alternatives not considered by NYPA may have been more financially beneficial to NYPA, and may also have been more financially beneficial to NYPA's government customers. In addition, in the new competitive markets created by the restructuring of New York State's power industry, one of the alternatives not considered by NYPA may have been more financially beneficial, in the long run, to all power users in the New York City area. We also determined that improvements are needed in NYPA's cost estimation process, as NYPA's estimate for the new plant rose from $375 million in 1999, when NYPA's Board of Directors approved financing for the project, to $650 million in 2002, when construction actually began. NYPA's Board of Directors cannot make informed decisions about construction projects if cost estimates are not reasonably accurate, and we determined that many of the costs not identified until late in the construction planning process could have been identified earlier."

A follow-up audit dated July 31, 2006[6], found that:

> "The cost of the Palette plant had increased by another $90 million, bringing the total budgeted cost to $740 million – almost twice that originally estimated by NYPA when the project was first approved in 1999."

With respect to the peaking plants constructed by NYPA in 2001, the Comptroller's May 2004 Audit found that they had resulted in a $175 million loss for NYPA in the first two years of

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[5]Report 2001-S-64, http://nysosc3.osc.state.ny.us/audits/allaudits/093004/01s64.htm
[6] Report 2005-S-28, http://nysosc3.osc.state.ny.us/audits/allaudits/093006/05s28.htm.

operation, and that divestiture of the units to the private sector should be considered.

Specifically, the Audit noted the following:

> The eleven Power Now! Generating units are not used to supply NYPA's regular government customers in the New York City area; rather, they are typically operated only during periods of peak demand to provide additional power for the New York City wholesale market. NYPA installed these units in response to power shortages forecast by power industry regulators for the New York City area. In less than two full years of operation, NYPA had lost about $175 million on the units. We determined that, while NYPA's installation of the units met a public need, the units do not have to continue to be operated by NYPA. We recommended that NYPA formally evaluate whether the units should be sold to the private sector. We also recommended that NYPA make a clear public statement describing its role in the New York City power market, because in the absence of such a statement, private sector investment in the area may be discouraged.

BPA and NYPA offer two clear examples of the failure of power authorities to deliver their stated policy goals of less risk and cost to consumers. The onset of competition in the electric industry has only heightened the difficulty faced by power authorities. As a 1997 GAO report entitled *Federal Electricity Activities: The Federal Government's Net Cost and Potential for Future Losses,* stated regarding the TVA:

> "For TVA, the risk that the federal government will incur losses is remote as long as TVA retains a position similar to a traditional regulated utility monopoly in its service area. However, if this position changes and TVA is required to compete when wholesale prices are expected to fall, its high level of fixed costs and deferred assets compared to neighboring utilities make it reasonably possible that the federal government would incur future financial losses."

The actions by the California Department of Water Resources ("DWR") provide another perspective on the limitations of state power authorities to deliver. In January 2001, the DRW was tasked with purchasing electricity for 27 million people and entered into 56 long-term agreements at a cost of $42 billion over 12 years. The DRW was sharply criticized for the lack of any public input into these purchasing decisions, with most experts agreeing that the contracts

were well above market prices. As a result, the DWR has been spending considerable taxpayer resources and money to renegotiate 34 of these 56 contracts.

Power authorities were formed with the best policy goal intentions but have clearly not delivered what they promised.

Clearly, power authorities were formed with the best public policy intentions. However, as illustrated at the federal and state levels, traditional power authorities have not delivered what they promised.

VII. Conclusion: Should States Form Public Power Authorities?

In an industry characterized by increasing energy demand across the globe, significant infrastructure needs across North America, rapidly rising prices for fuel and power plant construction and the near certainty of comprehensive climate change regulation, states face an almost unmanageable assortment of policy challenges. It's natural to look for bold and sweeping solutions to match the scope of the undertaking. The establishment of power authorities represents a well-intentioned search for a silver bullet solution. Unfortunately, the formation of these bureaucracies has the potential to make matters far worse for consumers, regulators and policymakers.

The danger with power authorities is in overreaching. They should not develop, finance or own generation resources. Should they enter this arena, they assume – and ratepayers shoulder – enormous financial risk. Having a government charter does not render power authorities immune from financial and commodity risk. In fact, they are deeply exposed and in a position to be overwhelmed in volatile commodity cycles. Private developers are better able to take on and manage investment risk and to develop and finance power plants. If the

A power authority such as NYSERDA that houses a state's conservation and energy efficiency programs into one single entity has some merit.

development, ownership or construction of these resources creates unforeseen costs or debts, private investors and their shareholders bear the costs, not captive taxpayers.

As illustrated throughout this paper, traditional power authorities owning or managing generation resources should be viewed with great skepticism for the following reasons:

- ***Power authorities are riskier*** – from both a reliability and financial perspective, power authorities are riskier. As described earlier in a 1999 GAO report on the BPA, federally run hydropower plants are generally less reliable in generating electricity than are nonfederal hydropower plants. As the report noted:

  > "These plants could not always obtain funding for maintenance and repairs when needed, and, as a result, the agencies postponed maintenance until the money was available. These delays caused frequent, extended outages and inconsistent plant performance."

  From a financial perspective, the risk of failing to perform by a power authority falls upon the taxpayers, not shareholders as is the case with a private company. As illustrated by the 2004 New York State Comptroller's Office Audit, the planning and major operating losses of the power authority caused significant costs to the state.

- ***Power authorities are less financially stable*** – the organizational structure and lack of proper cost control incentives tend to make power authorities less financially stable. As the GAO Report on the TVA pointed out, an investor-owned utility can use equity financing but power authorities must rely upon debt to finance capital, with greater fixed costs leading to higher rates. A 2001 NYPA study pointed out the lack of incentives for NYPA to control waste and inefficiency. The report concluded:

  > "This audit is a red flag that NYPA is not managing these enormous public assets based on sound business practices."

- ***Power authorities do not guarantee lower costs*** – there is no guarantee that any organizational structure can provide low costs. Historically this has applied to power authorities as well. The earlier quoted GAO study found that BPA wholesale prices doubled in the period 1972-2001 while costs from other sources of power fell. As described earlier, NYPA recently built several large plant projects using inaccurate construction costs and future revenue estimates that resulted in net losses. This type of management and lack of planning will not deliver lower costs to consumers.

A traditional power authority is a bad policy choice, providing greater reliability and financial risk, less financial stability and no guarantee or lower costs.

As states look ahead to their energy challenges, a variety of policy tools should be examined. In this examination, it will be important to keep in mind that there is not a silver bullet that will easily and painlessly solve all the challenges of infrastructure needs, growing demand and costs, environmental considerations and all these other energy policy issues. A power authority with a limited scope focusing on consolidating functions such as energy efficiency and demand resources into one entity may serve a limited purpose. However, a power authority that constructs, owns or operates generation resources is fraught with risk and should not be considered an answer to the significant energy policy challenges ahead for the states.

Appendix:

Case Studies of Select Power Authorities

A. The Tennessee Valley Authority ("TVA")

The Tennessee Valley Authority ("TVA"), a product of President Franklin Roosevelt's New Deal program, was created by the U.S. Congress in 1933. At this time the stated purpose of the TVA was to reduce the risk of flood damage, improve navigation in the Tennessee River, provide electric power and promote industrial and agricultural development in the region. Today, the TVA is a federal corporation and the largest public power company in the U.S. It is wholly-owned by the U.S. government and operates fossil fuel, nuclear and hydro plants, and produces electricity from renewables, in addition to managing the Tennessee River system.

The TVA is now self-funding, financing its programs from power sales and sales of bonds. Although its power program appropriations ended in 1959, and environmental and economic development appropriations ended in 1999, the TVA is still required to make annual payments to the U.S. Treasury. Of the original $1 billion appropriation investment, approximately $150 million remains. For each year 2004-2006, the TVA paid $20 million back to the Treasury.

The TVA is authorized to issue bonds to finance its activities, in amounts not to exceed $30 billion. Currently, it has $22.9 billion outstanding in bonds. Debt service on the bond obligations take precedence over U.S. Treasury obligations. For 2006, the TVA had total operating revenues of $9.062 billion, with $9.185 billion in sales of electric power.

The TVA has resources totaling 30,633 MW of net winter capability. Coal comprises a major share of these resources (15,081 MW), followed by nuclear (5,770 MW), hydro facilities (5,144 MW), CTs (4,633 MW) and renewables and other generation. Within its service area,

TVA serves 8.7 million people over 17,000 square miles of transmission lines with a system peak load of 32,008 MW.

A Board of Directors, appointed by the U.S. President, with advice and counsel of the U.S. Senate, governs the TVA. In 2005, Congress changed the structure of the Board from three full-time members to nine part-time members. More information on the TVA can be found at www.tva.or.

B. The Bonneville Power Authority ("BPA")

Also as part of President Franklin Roosevelt's New Deal program, Congress created the Bonneville Power Authority ("BPA") in 1937 to deliver and sell power from the Bonneville Dam in the Pacific Northwest. President Roosevelt campaigned on this issue in 1932 stating that the next great hydroelectric project would be built on the Columbia River to "prevent extortion against the public by the giant electric utility holding companies." Today, the BPA markets power from 31 hydroelectric projects located primarily along the Columbia River to customers in Idaho, Oregon, Washington, Montana, Nevada and California, over a service area of 300,000 square miles.

Prior to the mid-1990s, the construction and maintenance of Corps and Reclamation generation facilities were funded through federal appropriations. The Energy Policy Act of 1992 required BPA to directly fund most of its own operating and maintenance expenses, capacity expenditures and reliability improvements. The Transmission System Act of 1974 required BPA to be self-financed and pay its costs from revenues from power sales and transmission. The BPA continues to make annual payments to the U.S. Treasury from its net proceeds. In 2006, BPA made a Treasury payment of $1.113 billion -- $646.2 million in principal; and interest, and

$390.6 million in interest on Treasury bonds. BPA's borrowing authority is limited to $4.45 billion on the aggregate principal amount of bonds. As of September 2006, $2.48 billion in bonds was outstanding.

The BPA markets electric power from 31 hydroelectric projects with aggregate output of 9,000 MW and contracts for all output from Energy Northwest's Columbia Generating Station. Its customers are a mix of cooperatives, municipalities, public utility districts, federal agencies, investor-owned utilities, direct-service industries, power marketers and transmission customers. The Secretary of Energy appoints the BPA Administrator. More information on the BPA may be found at www.bpa.org.

C. The New York Power Authority ("NYPA")

One of the most well-known power authorities in the United States is NYPA. NYPA is a New York State public benefit corporation. Ranking as the third largest publicly-owned public utility in the United States in generation owned (measured in net generation MWh), NYPA owns and operates approximately 5,000 MW of hydro-electric power and 2,000 MW of fossil fuel generation plants. NYPA also owns more than 1,400 circuit-miles of transmission lines.

NYPA finances the construction of its projects through bond sales to private investors, repaying bondholders with proceeds from its operations. NYPA has a substantial budget ranking as the fourth largest publicly owned utility in the United States from a revenue perspective.[7] In 2006, NYPA's annual operating budget was approximately $2.5 billion, with net revenues of approximately $137 million.[8] Similar to privately run companies, NYPA's revenues and costs vary by year and are impacted by costs of fuel, the price of power that it buys and sells and how well it performs its considerable financial hedging activities. In 2006,

[7] According to APPA, NYPA had about $2.4 billion in revenues in 2005.
[8] See http://www.nypa.gov/financial/budgetreports/7-Financial%20Report%20-%20Exh%20B.PDF

NYPA for example, its operating revenues were approximately $254 million less than budgeted.[9]

NYPA was created by the New York Legislature in 1931 specifically to develop New York's significant untapped hydro-electric resources. This effort to secure public control of New York's hydropower resources was the result of a bipartisan effort that began with Governor Charles Evans Hughes in 1907.

NYPA sells electric power to government agencies, community-owned electric systems and rural electric cooperatives, companies, private utilities for resale to their customers, and to neighboring states. NYPA also promotes energy efficiency and the development of clean energy technologies and electric vehicles, committing $100 million a year to these energy services. NYPA competes with private suppliers in New York and is an active participate in NYISO stakeholder meetings and FERC proceedings. NYPA is also subject to federal authority. As a registered entity with NERC, NYPA has compliance requirements with federal mandatory reliability standards.

NYPA is managed by an independent Board of Trustees consisting of five members, all of whom are appointed by the Governor and confirmed by the State Senate.

More details regarding NYPA can be found on its website http://www.nypa.gov/.

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[9] The difference as explained by NYPA in its financial reports was primarily due to lower than expected wholesale power prices and retail prices. In 2006, however, better than expected water flows on its hydro facilities, higher than expected investment income and lower than expected interest income resulted in a net positive revenues.

D. Long Island Power Authority("LIPA")

LIPA, a municipal subdivision of the State of New York, was created under the Long Island Power Act of 1985 to acquire the Long Island Lighting Company (LILCO)'s assets and securities from the financially failing LILCO. In June 1998, a second Long Island Power Authority (LIPA), a wholly-owned subsidiary of the first, acquired LILCO's transmission and distribution system. LIPA has the power to construct its own utility facilities, to issue bonds to finance such construction, and to buy and sell power.

LIPA is an example of the municipal model of a state power authority. It ranks as the second largest publicly-owned utility in the nation from a customer revenue perspective[10] with approximately $3.6 billion in electric revenues in 2006 and operating expenses of about $3.3 billion.[11] Serving more than one million retail customers, LIPA ranks as the third largest publicly-owned utility as measured by customers served.[12]

LIPA owns limited generation assets, including an undivided 18 percent interest in Nine Mile Point Nuclear Plant in New York, which is managed and operated by Constellation Energy. LIPA relies heavily on purchases of power from the competitive wholesale market to meet its load serving obligations. While LIPA owns some assets, it primarily acts as a load serving entity (LSE) and competes for supply in the competitive wholesale markets of the Northeast. LIPA also actively participates in the stakeholder process in PJM, New York and New England, and at FERC to ensure the continued success of these competitive markets. Recently, LIPA entered into a contract with Neptune Transmission for approximately 600 MW of transmission capacity from PJM to New York, allowing LIPA to access lower cost energy and capacity supplies in

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[10] APPA ranking of largest publicly owned utilities by revenues, 2005.
[11] LIPA's revenues exceeded expenses by $118 million in 2006 as compared to $20 million in 2005 and 2004. See http://www.lipower.org/pdfs/company/investor/lipa_financials2006.pdf.
[12] APPA ranking of largest publicly owned utilities by customers, 2005.

PJM. LIPA has also announced numerous other commitments to private generators to secure supply.

LIPA does not operate its own transmission and distribution system but has engaged KeySpan Energy Corporation, a private utility, through a management service agreement to manage and operate the facilities. LIPA also has entered into numerous other management service agreements with KeySpan to manage and operate its facilities and pays KeySpan about $2 billion annually for these various operating agreements.[13] KeySpan announced its acquisition by National Grid in 2006..

Additional details regarding LIPA may be found on the LIPA website http://www.lipower.org/.

E. New York State Energy Research and Development Authority ("NYSERDA")

NYSERDA is a public benefit corporation that does not own assets or exercise traditional utility type powers. Created in 1975 by the New York State Legislature, NYSERDA's focus is on energy research and development centered on energy efficiency. NYSERDA also invests in renewable energy through programs that provide funds to businesses that wish to perform research development projects or establish renewable manufacturing facilities within New York.

Currently, NYSERDA is primarily funded by state rate payers through the System Benefits Charge (SBC), but it also meets its financial needs through state appropriations, federal funding and other miscellaneous income sources. Its SBC collections are reviewed periodically and extended for specified time periods. Currently, the SBC collections for NYSERDA programs are authorized until June 30, 2011.[14]

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[13] http://www.lipower.org/pdfs/company/investor/lipa_financials2006.pdf
[14] http://www.nyserda.org/publications/05-06%20Section%205.pdf

In 2006, NYSERDA's revenues were about $230 million with program expenses about $207 million, as compared to about $210 million and $203 million in 2005. *Id.*

NYSERDA is governed by a board consisting of 13 members, including the Commissioner of the Department of Transportation, the Commissioner of the Department of Environmental Conservation, the Chair of the Public Service Commission, and the Chair of the Power Authority of the State of New York, who serve *ex officio*. The remaining nine members are appointed by the Governor of the State of New York with the advice and consent of the Senate and include, as required by statute, an engineer or research scientist, an economist, an environmentalist, a consumer advocate, an officer of a gas utility, an officer of an electric utility, and three at-large members. Additional details regarding NYSERDA may be found on the NYSERDA website http://www.nyserda.org/default.asp.

F. The Vermont Public Power Supply Authority ("VPPSA")

VPPSA is an example of a joint action agency. VPPSA has broad authority to contract to buy and sell wholesale power within Vermont and wholesale and retail power outside Vermont, as well as to issue tax-free debt on behalf of municipal and cooperative electric utilities within Vermont. VPPSA currently owns undivided interests in a wood-burning generating station in Vermont, resulting in ownership of approximately 10 MW of generation. It also owns an interest in the converter station that connects the New England system with the Hydro-Quebec system. VPPSA supplies approximately 120 MW of power for load serving purposes. VPPSA provides wholesale power supply to 17 municipals and cooperatives in New England, as well as, a host of other services such as rate studies, central computer services, load forecasting, and tax free financing of certain capital projects.

VPPSA relies heavily on the competitive wholesale market in New England and is an active participant in ISO-NE stakeholder meetings to ensure that the ISO-NE market continues to provide a competitive source of power.

In 2006, operating revenues for VPPSA was about $45 million and operating expenses were about $43 million, as compared to $35 million and $33 million in 2005.[15] Additional details regarding VPPSA may be found on the VPPSA website http://www.vppsa.com.

G. Efficiency Vermont

Efficiency Vermont is an example of a private entity vested by contract with a public purpose. In 2000, the Vermont Department of Public Service awarded an energy efficiency performance contract to a non-profit company called Efficiency Vermont (EVT). EVT does not own or operate any generation, transmission or distribution facilities.

EVT is administered by Vermont Energy Investment Corporation (VEIC), an independent non-profit energy services organization under contract to the Vermont Public Service Board. VEIC provides energy efficiency in Vermont and in more that 20 states and eight countries. The EVT model is akin to traditional contracts for services that a state would award to a third party.

EVT is responsible for the design, management and budgets of all energy efficiency programs in Vermont, except within the service territory of Burlington Electric Department (which serves the State's largest city), who has a performance-based contract with VEIC to meet those needs. EVT provides technical assistance and financial incentives to help Vermont citizens identify and pay for cost-effective approaches to energy-efficient building design,

[15] See http://www.vppsa.com/, 2006 audited financial statements

construction, renovation, equipment, lighting and appliances. EVT works directly with business and residential customers on efficiency.

In 2006, EVT had operating expenses of about $28 million. In 2006 EVT claims to have saved about 56,000 MWh and about 10 MW summer peak reduction and 9 MW winter peak shavings.[16] In 2006, EVT was an active participant in NEPOOL working through stakeholder processes to ensure that its efficiency services were recognized and compatible with the competitive wholesale market administered by ISO-NE.

Additional information regarding EVT may be found on the EVT website http://www.efficiencyvermont.com/pages/.

[16] http://www.efficiencyvermont.org/stella/filelib/EfficiencyVermontAP07-8_Final.pdf.