



## Short communication

## The peculiar economics of federal energy management



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## HIGHLIGHTS

- Legislative and regulatory initiatives that constrain federal agency energy investments.
- Economic calculus facing a federal agency energy manager.
- Magnitude of federal energy investments and of possible waste.
- Financing mechanisms and how their costs might be reduced.

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## ABSTRACT

US federal agency energy managers face different constraints than do comparable private sector managers. They are faced with energy consumption goals mandated via legislation or directed via Presidential Executive Order that encourage if not compel them to invest more in energy efficiency or renewables than would be cost effective from a private sector perspective. To make such investments, they also are provided access to private capital that is additional to their agency budgets. The encouragement to invest beyond what is cost effective may be a source of waste in some instances, and the financing mechanisms appear more expensive than necessary. A rough estimate of the magnitude of the waste is offered, as well as a mechanism to reduce the costs of agency access to capital.

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## 1. Introduction

In Fiscal Year 2014, the US federal government spent over \$23 billion on energy. The majority was spent on vehicle fuels, principally military jet fuel, but over \$7 billion was spent on facility energy, and of this, over \$6 billion was spent on “goal-subject” buildings.<sup>1</sup> In this note we explore the meaning of “goal-subject” as it applies to investment in federal buildings, how the calculus of such investment differs from that in the private sector, and some implications for resource use.<sup>2</sup>

That the management of resources within the federal government is different from that in the private sector is well known. Different incentives motivate federal managers, in part because their employers, the heads of federal agencies, have no claim to financial resources earned or saved through federal activity whereas private firms do have such claims to resources and therefore seek to motivate their managers accordingly.<sup>3</sup>

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<sup>1</sup> See US Department of Energy (2015).

<sup>2</sup> The economics of federal vehicle management, particularly of military vehicle management, also raise interesting resource allocation issues, but we ignore them herein. See however Canes (2008).

<sup>3</sup> There is a long history of literature in this area. See for example Niskanen (1968, 1975) and also Alchian and Demsetz (1972).

Though the above generalization applies to resource management generally, energy receives special treatment within the federal sector. Several laws, Executive Orders, and announced Agency objectives specifically target federal energy use in one way or another.<sup>4</sup> Generally, these laws and orders set goals and timetables for increased facility or vehicle energy efficiency and the use of renewable energy and fuels. To the extent these goals or targets are treated as binding by federal managers, they alter the economics of energy within the federal sector.<sup>5</sup> In addition, there are constraints upon the financing of federal energy investment that further affect these economics.

The next section briefly discusses how energy has been viewed by US policy makers, which helps to understand why special laws and regulations apply to it. Then we describe a series of laws and other strictures that affect federal energy management. These

<sup>4</sup> There have been a number of such laws and Orders, stretching from the National Energy Conservation and Policy Act of 1978 to Executive Order 13693 of March 2015. Other pertinent laws and executive actions are mentioned below.

<sup>5</sup> Some private firms also set energy-related targets, sometimes in partnership with a government agency such as EPA. However, since these firms must compete for investment capital, the underlying motive tends to be to gain market share, sales and profits through the positive public relations that accrue from setting and achieving the targets and publicly advertising such achievements.

include laws affecting how federal energy projects can be financed. In the following section we explain how these laws affect the economics of federal energy management. We show how energy projects that likely would be rejected by private agents are adopted within the government, and we compare actual federal borrowing costs under existing constraints with what they would be without those constraints. We conclude with a few observations on federal policy objectives and how they might be achieved at lower cost.

## 2. Background

At least as far back as 1973, when the Arab oil embargo occurred, the federal government has taken a special interest in energy markets. At that time, President Nixon launched Project Independence, a notional attempt to make the US independent of foreign oil, but soon the policy community realized that such independence would not be possible except at great cost to the nation. Over time, a somewhat different approach towards oil was fashioned, mostly reliance on open markets but with a large reserve of strategic oil stocks known as the Strategic Petroleum Reserve (SPR),<sup>6</sup> which is intended to mitigate the adverse economic consequences of an international oil supply disruption.<sup>7</sup> Even then, various Presidents have complained about America's "addiction" to oil and encouraged means to reduce its consumption.

The result of Congressional and Presidential attention has been a series of legislative acts and regulations setting vehicle fuel efficiency standards and mandating the substitution of biofuels, mainly ethanol, for gasoline and diesel in the national motor fuel market. The legislative history includes the National Energy Conservation Policy Act of 1978, the Energy Policy Act of 1992, the Energy Policy Act of 2005 and the Energy Independence and Security Act of 2007 (EISA). In addition to regulatory agency activity, Presidential action includes Executive Order 13423 of January 2007, 13514 of October 2009, and 13693 of March, 2015.

Separately, over the last several decades national concern has increased over the environmental impacts of the production and consumption of fossil fuels. These impacts arise from emissions related to criteria pollutants,<sup>8</sup> toxic substances,<sup>9</sup> and greenhouse gases.<sup>10</sup> To control these emissions, a series of environmental statutes have been enacted under which the EPA has fashioned an extensive set of regulations. This regulatory regime is the main tool in use in the United States to reduce the impacts of fossil fuel-related emissions.

## 3. Targets and timetables

Various presidents have seen fit to ask federal agencies to manage their energy consumption even more strictly than required under statute. In some cases Congress has written Presidential directives into law and a few agencies have taken it upon themselves to set yet stricter objectives. With respect to federal facilities, these have taken two main forms. First, agencies are asked to meet

**Table 1**  
Energy reduction goals for federal agencies in terms of BTUs/square foot (% reduction relative to FY2003).

Fiscal year	Percent reduction required
2006	2
2007	4
2008	9
2009	12
2010	15
2011	18
2012	21
2013	24
2014	27
2015	30

certain goals regarding building energy efficiency, which is defined as the amount of energy consumed per square foot of space (energy intensity). Section 431 of the Energy Independence and Security Act of 2007 (EISA 2007) specifies a set of energy reduction goals for federal agencies, expressed in terms of reductions in energy use per square foot relative to a baseline set by their energy consumption in 2003. The reduction targets are as shown in Table 1.

Thus, for example, if a federal facility used 100 Btus per square foot at its facilities in Fiscal Year (FY) 2003, it should be using only 70 Btus per square foot in FY 2015.

Targets also have been set with respect to the use of renewable energy as a proportion of the total amount of electrical energy consumed. In 2015 President Obama issued an Executive Order that specified the following targets:<sup>11</sup>

- Not less than 10 percent renewable energy in FY2016 and 2017.
- Not less than 15 percent renewable energy in FY2018 and 2019.
- Not less than 20 percent renewable energy in FY2020 and 2021.
- Not less than 25 percent renewable energy in FY2022 and 2023.
- Not less than 30 percent renewable energy in FY2025 and thereafter.

Thus, if an agency consumes 100 kWh of electricity in FY2025, no less than 30 kWh should come from renewable forms of energy.

How seriously are federal managers likely to take these various goals? After all, they are not likely to be put in prison or even fired if the goals are not met. Energy use is not the only federal priority.

Nevertheless, there is reason to view them as a meaningful constraint upon federal manager actions. Every year the Office of Management and Budget issues a "scorecard" under which each agency's progress towards meeting its energy goals is rated. On the scorecard, this progress is shown in three colors: green – on track to meet a goal; yellow – behind schedule to meet the goal; and red – off the track. The scorecard is made publicly available, though some agencies appear to offer the information to the public with a lag.<sup>12</sup> This tool provides the White House, Congress and members of the public a means with which to critique or praise any particular agency. Presumably no agency head likes to see much red on their scorecard, since they will have to defend the agency's energy and environmental performance in multiple forums. They will be

<sup>6</sup> As of August 2015, the SPR held around 694 million barrels of crude oil, which amounts to about 137 days of net US oil imports (imports less crude oil and product exports). See DOE, Office of Fossil Energy (2015).

<sup>7</sup> By agreement, the release of strategic oil stocks in the face of an international supply disruption is to be coordinated with the actions of other countries who are members of the International Energy Agency. The purpose is to avoid an economy-damaging spike in world oil prices. The ability of the SPR to mitigate the effects of an oil price spike is analyzed in Difiglio (2014).

<sup>8</sup> In the US, the six criteria pollutants are low-level ozone, lead, nitrogen oxides, carbon monoxide, sulfur oxides, and particulate matter.

<sup>9</sup> These are mostly heavy metals such as mercury, lead and arsenic but also include acid gases and other substances.

<sup>10</sup> Principally CO<sub>2</sub>, but including methane as well.

<sup>11</sup> Executive Order 13693, "Planning for Federal Sustainability in the Next Decade," March 19, 2015.

<sup>12</sup> The Department of Agriculture has reported its scorecard results for FY2014. It was on track (green symbol) with respect to energy efficiency, reducing GHG emissions, the use of renewables and some other goals, behind schedule on a green building goal (yellow symbol) and off track in reducing fleet petroleum use (red symbol). The Department of Defense public website, on the other hand, only provides scorecards through FY2013 (4 green circles, 2 reds and 1 yellow). Still, the agencies report to OMB on their energy management a few months after the end of a fiscal year. Congress and OMB are aware of these reports and can review the latest scorecards with agency managers even if they have not been publicly reported.

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