Political Context Elements in Public Policy of Radio Frequency Information Technology and Electromagnetic Fields

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INTRODUCTION

A pinnacle in e-governance was reached with the development of information systems that utilize radio frequency technologies. For example, Radio Frequency (RF) towers' capabilities as communication and monitoring devices enable efficiency maximization and real-time solutions. Also, Advanced Imaging Technology (AIT) allows for quick and reliable information processing for purposes of tracking and surveillance. There are several advantages to government's use of Radio Frequency Information Technology (RADFIT) such as the ability to quickly communicate across a wide range of global positioning systems, management of communication portals, and survey of visitors entering secure environments in the case of millimeter wave scanning.

The main issue with the presence of radio frequency electromagnetic fields (RFEMF) is balancing the benefits provided from supporting the RADFIT systems with the environmental effects of electromagnetism. Regulation of technologies is controversial as agencies and stakeholders struggle to weigh benefits and costs. Hood et al. (2001) presents a framework for understanding regulatory policy domains by classifying benefits and costs of Information Technology (IT) sciences according to competing political systems: interest group, entrepreneurial, client, and majoritarian. The interaction of these political context elements influences the corresponding regulatory regimes, which are ideographs that describe the track of reasoning of RADFIT systems consumers, producers, and regulatory bodies. By examining

regulatory regimes of the RADFIT sphere, public policy implications and future research directions emerge that may improve participatory confidence and informational effectiveness while mitigating threats to communities.

The main purpose of the manuscript is to discuss political context elements and their impact on the public policy arena surrounding RFEMF issues, in addition to touch upon organizational initiatives and public management alternatives. Political context elements of regulatory regimes are presented first. According to the *interest group* political system, incrementalism and the status quo are introduced as encumbrances to policy change. Lack of organization in the public policy arena limits viable alternatives and contributes to government lethargy. The *entrepreneurial system*, indicative of rational choice and new public management, is subsequently discussed as the prompt and elicitor of RADFIT solutions. Modernism and progression serve as societal themes that steer entrepreneurialism in IT and public sector activities in general. Next, the *client system*, which involves administrative responsibility, is highlighted as the regime offering the most potential for bureaucratic discretion and inquiry. The opportunities for interaction between regulatory agencies and resident stakeholders, creates inconsistencies and marginalization of particular societal participants. Then, the *majoritarian system*, serving as the basis for democratic forms of governance, is detailed so as to review the unresolved paradoxes involved in representative decision rules such as voting. Subsequently, organizational and community leadership initiatives, despite the obstacles posed

by political context elements, are illustrated to show the current state of organized opposition to RADFIT proposals. Recommendations and areas for further research follow in an attempt to consolidate diffuse community efforts.

There are several objectives of this entry. The controversy over RADFIT solutions is examined to explain how political context elements dictate regulatory regimes of the RFEMF sphere. This entry aims to provide an overview of the bureaucratic considerations underlying RADFIT guidelines and public policy as well as the response by communities. Public administration theory and recommendations for future action serve to provide frameworks for additional policy analysis. The goal is not to provide a comprehensive review of the RFEMF regulatory arena but instead to illuminate indicators that create the onset and resonance of various regulatory regimes, or ideographs, that dictate the decision-making of public policy participants of RADFIT applications including RFEMF, along with implications for communities.

BACKGROUND

There are millions of RF tower base sites in the world. The United States alone has more than 301,779 radio frequency tower and transmission base sites (Cellular Telecommunications Industry Association, 2013). In many cases the towers stand from 50 feet to 200 feet tall. RF base sites also exist in the form of small individual devices less than 2 feet by 1 feet in size that may be mounted on building roofs or siding. Broadly, the United States Department of Commerce identifies several objectives for the use of the radio spectrum and RFEMF to carry out national policies and achieve national goals such as national security, safeguarding of life and property, support crime prevention and law, foster conservation of natural resources, provide for dissemination of information and entertainment, promote research and exploration, stimulate social and economic

progress, and generally improve the well-being of man (National Telecommunications and Information Administration, 2014: Chapter 2). More specifically, several areas of strategic interest are identified according to these objectives including agriculture, consumer expenditures and saving, education, health, oceanography, public safety, outer space, social welfare, transportation, and urbanization (National Telecommunications and Information Administration, 2014: Ch. 2).

At the local level, by 2011, automatic license-plate readers were utilized by about three-quarters of police departments surveyed (American Civil Liberties Union, 2013), with civilian uses of license-plate readers emerging (Hardy, 2014). Commercially, retailers employ companies that track shoppers through cell phones in order to identify return shoppers and learn about other shopping habits or patterns while in the store for the purposes of improving store layouts, marketing, and overall profitability (Clifford, 2013a; Clifford, 2013b). In turn, government enjoys larger tax receipts from the increases in purchases that result.

The RADFIT data collected is transmitted, stored, processed, and analyzed at data centers. These large warehouse-type buildings house servers and hard-disk drives that sit on concrete slabs as large as several football fields and are typically located in rural areas where power is less expensive (McLellan, 2013). There are over 6000 data centers in the world with more than half in the U.S.; each data center consumes the amount of power equivalent to a city with 20,000-40,000 residents (President's Council of Advisors on Science and Technology, 2014, p. 30).

The environmental effects of RF tower bases have been of concern to community residents and researchers alike. For example, RF tower installation at public schools has been strongly opposed by various community voluntary initiatives and political activist groups (Steinfeld, 2013). Similar to the RF towers that utilize RFEMF technology, AIT scanners are commonly used to scan subjects entering secure areas. In May 2013, the Transpor-

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