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Sensible Bytes: States Need a New Approach to Justify Their Recruitment of Internet Data Centers

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SENSIBLE BYTES: STATES NEED A NEW APPROACH TO JUSTIFY THEIR RECRUITMENT OF INTERNET DATA CENTERS

MICHAEL F. KAESTNER*

INTRODUCTION

Fundamental changes in the American economy have helped fuel a rapid rise of the internet. As traditional manufacturing has shifted to other countries from America, the growth of the technology sector has helped replenish those job losses.[1] In general, as opposed to the manufacturing sector, which adds value to commodities, the technology sector relies on adding value to information. Instead of transportation by trucks, barges, or trains, the technology sector relies on the movement of information over the internet to fuel its operations.

Data centers are becoming more commonly used to enable this movement of information.[2] In the United States, the "data center industry is in the midst of a major growth period stimulated by increasing demand for data processing and storage," driven in part by their increased use of financial transactions, electronic medical records, online commerce, and other uses.[3] These centers come in many shapes and sizes, but they are often located in inconspicuous buildings that house millions of dollars worth of interconnected computer servers and other equipment which are designed to access and transmit data as quickly and reliably as possible.[4] Small but well-trained staff operate them.[5]

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[1] *See* Charles Gerena, *A New Kind of Farm*, 15 REGION FOCUS 28, 28 (2011).

[2] MAURICIO ARREGOCES & MAURIZIO PORTOLANI, DATA CENTER FUNDAMENTALS 6 (2004).

[3] EPA, PUB. L. 109-431, REPORT TO CONGRESS ON SERVER AND DATA CENTER ENERGY EFFICIENCY 4 (2007) [hereinafter ENERGY STAR REPORT].

[4] Kent Garber, *The Internet's Hidden Energy Hogs*, U.S. NEWS & WORLD REP. (Mar. 24, 2009), http://www.usnews.com/news/energy/articles/2009/03/24/the-internets-hidden-energy-hogs-data-servers; Rich Miller, *A Data Center that Mimics a Mansion*, DATACENTER KNOWLEDGE.COM (Jan. 20, 2012), http://www.datacenterknowledge.com/archives/2012/01/20/a-data-center-that-mimics-a-mansion/ ("Data centers are typically located in commercial and industrial zones, often in nondescript buildings that provide both anonymity for security-conscious tenants and structural integrity to weather storms, earthquakes and other natural disasters.").

[5] *See* Gerena, *supra* note 1, at 30.

Perhaps because they do not carry the stigma of smokestacks or waste water emissions that some manufacturing facilities do,[6] "Americans think very highly of the computer [and] Internet . . . sectors."[7] "Internet-based industries have honed a reputation for sleek, clean convenience based on the magic they deliver to screens everywhere."[8] Their reputation can help bring pride to a local community.[9] Because of all of these benefits, communities across America typically welcome them warmly.

Despite positive public perception and a general lack of local adverse effects, data centers have significant environmental consequences. The United States Environmental Protection Agency ("EPA") estimated that data centers consume almost two percent of all electricity usage in the United States.[10] This high consumption of electricity is a significant operating cost for data centers. As a result, the availability of affordable electricity is one of the most important factors in driving their location decisions.[11] Because electricity from coal and nuclear sources tend to be

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[6] Only fifty-six percent of respondents in a survey among Americans believe jobs in manufacturing are clean and safe. *See* CRAIG GIFFI & JENNIFER MCNELLY, DELOITTE & MFG. INST., LEADERSHIP WANTED: U.S. PUBLIC OPINIONS ON MANUFACTURING 10 (2012), http://www.themanufacturinginstitute.org/News-Articles/2012/10/25-Public-Perception.aspx (click on "2012 Public Perception of Manufacturing Report").

[7] Frank Newport, *Americans Rate Computer Industry Best, Oil and Gas Worst*, GALLUP ECONOMY (Aug. 16, 2012), http://www.gallup.com/poll/156713/Americans-Rate-Computer-Industry-Best-Oil-Gas-Worst.aspx. The author continues:

> [T]he oil and gas industry may get dinged by some Americans for its perceived poor environmental record. On the other hand, America has remained the world's dominant player in many aspects of the computer industry, with companies like Apple, Google, and Facebook standing as examples of entrepreneurial efforts that arose in short periods of time to offer products and services used the world over. It appears that Americans appreciate these success stories and hold these industry sectors in high esteem.

Id.

[8] James Glanz, *Data Barns in a Farm Town, Gobbling Power and Flexing Muscle*, N.Y. TIMES, Sept. 23, 2012, http://www.nytimes.com/2012/09/24/technology/data-centers-in-rural-washington-state-gobble-power.html.

[9] James Heaney, *Sweet Deals Lure Major Data Centers*, BUFFALO NEWS (Nov. 7, 2010), http://www.theboydcompany.com/pdf/BuffaloNewsBoyd.pdf (referring to data center projects in upstate New York, the author noted, "[e]conomic development officials regard data centers as a way to help change the region's economic image now associated with smokestacks and as an opportunity to gain a toehold in the high-tech economy.").

[10] ENERGY STAR REPORT, *supra* note 3, at 18.

[11] Thomas Freeman, *What's Important in the Data Center Location Decision?*, AREA DEVELOPMENT ONLINE (2011) http://www.areadevelopment.com/siteSelection/may2011/data-center-location-decision-factors2011-62626727.shtml.

the most affordable, data centers tend to locate in states with a high proportion of electricity production from these sources.[12] Both this volume and type of consumption gives rise to environmental concerns.[13] Recognizing the need to balance their operating costs with the pressure well-informed consumers place on data center operators to use cleaner energy sources, these companies are making great strides to conserve energy and adopt innovative electricity demand-management techniques.[14]

Data centers provide significant new taxable investments that generate lucrative revenue streams for the localities in which they locate. These facilities are particularly attractive to rural localities because the taxable investments they bring are large, but the modest number of new employees they hire results in a manageable expansion of expensive public services such as police and public schools.[15] Seeking to capture the benefits data centers can offer, many state economic development offices aggressively recruit them by offering a variety of tailored economic development incentive programs.[16] These include valuable sales, property, and income tax exemptions, credits, and other tax preferences.[17] Many states also allow electrical utilities to provide their own incentives to data centers in the form of reduced electricity rates.[18]

For a time, this recruitment activity served the purposes of economic development: to increase basic sector employment opportunities, grow the tax base, and build the economies of communities. In the late

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[12] Gary Cook, *How Clean Is Your Cloud?*, GREENPEACE INT'L 6 (2012), http://www.greenpeace.org/international/en/publications/Campaign-reports/Climate-Reports/How-Clean-is-Your-Cloud/. Duke Energy is the largest power provider in North Carolina and actively works with North Carolina economic development officials to recruit data centers. *See Data Centers Site Selection*, DUKE ENERGY, http://www.duke-energy.com/economic-development/data-centers-site-selection.asp (last visited Mar. 13, 2014). For a description of Duke Energy's generation mix, see *id.* (describing the composure of its generation mix as forty-seven percent coal, twenty-five percent gas, twenty percent nuclear, and eight percent hydroelectric and other).

[13] *See* DOUGLAS ALGER, GROW A GREENER DATA CENTER xvii (2009). "Data Centers have historically had a huge, negative impact upon their surrounding environment—consuming massive quantities of electric power and water, emitting pollutants through standby generator systems, and discarding materials detrimental to the environment in the form of UPS batteries and outdated computing hardware." *Id.*

[14] *See infra* Part II.C.

[15] Telephone Interview with David Hudgins, Dir. of Member and External Relations, Old Dominion Elec. Coop. (Feb. 20, 2013) [hereinafter Hudgins Interview]; Telephone Interview with Robert McClintock, Dir. of Research, Va. Econ. Dev. P'ship Auth. (Feb. 26, 2013).

[16] *See infra* Part III.

[17] *Id.*

[18] *See infra* Part IV.

1990s and even early 2000s, data centers were relatively rare; they were novel and brought a promise of additional expansion into the information technology sector.[19] Now, however, data centers are found across the country and their proliferation is a symptom of the growth of the technology sector.[20]

Many perceive the growth of the technology sector as concentrated in fancy office buildings[21] in Palo Alto or Seattle, but those headquarters are merely the brains of their operations. Data centers are the facilities where this industry actually provides the majority of its services. Thus, in effect, similar to retail outlets that sell goods that have been manufactured elsewhere, data centers are merely the retail operations of the technology sector that distribute services produced elsewhere.[22] They also support the growing demand for technology services required by nearly every task a typical person undertakes in a given day, from a visit to the doctor's office to a trip to the grocery store.[23] Further, the proportion of internet traffic that is for entertainment purposes (predominantly streaming audio and video from providers such as Netflix, Hulu, YouTube, and Spotify), is estimated to account for almost sixty percent of the world's internet traffic, and all of it flows through data centers.[24]

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This Note argues that states should reevaluate the incentives they provide to data centers because most are retail operations and thus are outside the appropriate focus of state economic development efforts. Further, providing these incentives fuels the growth of an industry that consumes a disproportionate amount of electricity, giving rise to concerns about energy availability and the environmental impacts associated with energy generation.

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[19] *See infra* Part V.
[20] *Id.*
[21] *See* GALLUP ECONOMY, *supra* note 7.
[22] For example, Google generated about $43.7 million in revenue from advertising sales in 2012. *Google 2013 Financial Tables*, GOOGLE, http://investor.google.com/financial/tables.html (last visited Mar. 13, 2014).
[23] James Glanz, *Online Cloud Services Rely on Coal or Nuclear Power, Report Says*, N.Y. TIMES, Apr. 17, 2012, http://www.nytimes.com/2012/04/18/business/energy-environment/cloud-services-rely-on-coal-or-nuclear-power-greenpeace-says.html.
[24] SANDVINE, GLOBAL INTERNET PHENOMENA REPORT 5–6 (2012), *available at* https://www.sandvine.com/downloads/general/global-internet-phenomena/2013/sandvine-global-internet-phenomena-report-1h-2013.pdf.

Data centers are outside of the traditional focus area of states' economic development efforts because most data centers are not part of states' economic bases. Some states have attempted to limit the incentives they provide to data centers to at least exclude the ones that most obviously provide retail services to local businesses, but many states do not. This Note argues that states should limit the incentives they provide to data centers to those that are true to their focus on building their economic base or can be justified otherwise, such as furthering states' social policy goals. Further, states should align their data center recruitment strategies with the reality that energy is a scarce resource and provide incentives only to those data centers that demonstrate special efficiency, demand management, and conservation efforts.

As a corollary to the energy concerns to which the unbridled recruitment of data centers contributes, this Note also recommends that states adjust the authorization they provide to energy regulators to approve the preferential electric rates that some utilities provide to data centers. Allowing utilities to provide discounted rates to certain customers can further good social and economic development policy,[25] but ordinary ratepayers should not be forced to subsidize data centers' disproportionately high consumption, nor should their consumption be encouraged with a discount. In particular, utilities should be allowed to provide preferential rates only to those data centers that this Note argues state economic developers should recruit, those that are part of a state's economic base or can be justified as furthering a state's economic development social policy goals, and demonstrate special efficiency, conservation, and demand management efforts.

By adopting these policy changes, states and localities will capture new tax revenues; the cost of energy will provide a more pronounced incentive for data center operators to improve energy efficiency; and a better alignment between states' energy and economic development policies will exist.

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Part I of this Note gives an overview of state economic development functions, the valuable purposes they serve, and the types of industries

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[25] *See, e.g.*, *In re Virginia Elec. & Power Co.*, 2004 WL 2656922, at *1 (Va.S.C.C. 2004) (approving an application to provide a preferential rate to a Chaparral Steel facility in Dinwiddie County, Virginia, since the "rates Chaparral pays for electric service are higher than Chaparral can profitably manage and that Chaparral represents its economic viability hinges upon the ability to lower this input cost immediately.").

they seek to recruit. Part II describes the characteristics of data centers located in the United States, including the factors that drive their location decisions, the costs they bring to their communities, and certain companies' laudable environmental efforts. Part III looks closely at the sales tax exemptions a number of states provide specifically to data centers and makes recommendations for improving their structure to advance sound economic development policy. Part IV describes data centers' roles in states' economies and posits that few should be considered part of a state's economic base. This section concludes by suggesting that the furthering of economic development social policies could be an appropriate justification for states' recruitment of data centers.

I. OVERVIEW OF STATE ECONOMIC DEVELOPMENT ENTITIES

A. Form and Purpose

States typically rely on a designated organization to undertake the lion's share of their economic development duties. The general mission of these state economic development entities is to enhance employment opportunities for residents, grow the tax base through business recruitment, and close economic disparities across regions.[26] This mission is critical to states' economies; fostering a good business climate and promoting private sector growth helps generate revenues that fund all the various services and programs that citizens expect. These entities market the assets of their respective states to particular business sectors, encouraging them to locate in their jurisdiction as opposed to elsewhere.

B. State Economic Development Entities Limit Their Involvement to Basic Sector Industries

State-level economic development entities do not seek to recruit all sectors equally. Instead, they tend to align their recruitment efforts with those sectors that will find their respective states most attractive

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[26] *See, e.g.*, *About Our Department*, NCCOMMERCE.COM, http://www.nccommerce.com/about-our-department (last visited Mar. 13, 2014) ("The department's mission is to improve the economic well-being and quality of life for all North Carolinians. The mission is carried out by serving existing business and industry, including providing international trade assistance; recruiting new jobs and domestic and foreign investment; encouraging entrepreneurship and innovation; marketing North Carolina and its brand . . . .").

and show opportunity for long-term growth. States frequently limit their efforts to only certain companies based on criteria pertaining to size, sector, and role in the economy.[27] These limitations are important to conserve limited staff and financial resources, including preventing involvement with economic development opportunities that will locate within a state without assistance.

Incentives are one type of tool that economic development entities use to recruit businesses. These come in a variety of forms: cash grants, tax preferences, infrastructure improvements, attractive financing, enhanced permitting processes, and specialized workforce programs among others. To establish a threshold criteria for determining which sectors or companies may merit the investment of state incentives, enabling statutes and implementing guidelines for many of these incentives limit their eligibility to businesses that are part of a state's economic base.[28] A state's economic base is generally made up of those industries that create wealth for the state rather than recirculating existing wealth.[29] For example, a manufacturer that produces widgets in a given state and distributes them nationally would be part of that state's economic base. If that manufacturer had a retail location that served local customers in that state, however, that retail location would not be part of the state's economic base. Retail businesses typically serve local and regional residents and are thus not part of the economic base.[30]

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[27] *See, e.g.*, NEB. REV. STAT. § 77-5725(f) (West 2013) (providing certain tax credits to certain businesses only if they hire at least seventy-five new employees); VA. CODE ANN. § 2.2-5100 (West 2012) (providing a definition of "basic employment").

[28] Matt Kane, *Public-Sector Economic Development: Concepts and Approaches*, NORTHEAST-MIDWEST INST. 12 (Nov. 2004); http://www2.econ.iastate.edu/classes/crp274/swenson/CRP523/Readings/econdevelopmentmattkane.pdf ("The economic base approach also will help prevent public subsidies for commercial real estate and for most retail development, both of which take place without public-sector assistance because of existing local demand."). *See, e.g.*, N.C. GEN. STAT. ANN. § 143B-437.53 (West 2013).

[29] Kane, *supra* note 28, at 7 ("An emphasis on the export base and import substitution underlies many public-sector economic development efforts, including . . . the development of supplier firms that produce goods and services that local businesses would otherwise import into the region."); *see also* VIRGINIA JOINT LEGISLATIVE AUDIT AND REVIEW COMM'N, REVIEW OF STATE ECONOMIC DEVELOPMENT INCENTIVE GRANTS 75 (Nov. 13, 2012) [hereinafter JLARC REPORT], *available at* http://jlarc.virginia.gov/ ("Export-based businesses generate new economic activity in the State by increasing revenue flowing into Virginia from other areas."). This Note synonymously refers to "basic sector" companies, those that are part of a state's economic base.

[30] Kane, *supra* note 28, at 12.

Some states statutorily limit certain incentive programs to basic sector projects.[31] One example is the Virginia Investment Partnership grant program, which is available to certain expanding businesses.[32] Only manufacturers and companies that create "basic employment" are eligible for these grants, and the implementing guidelines for this program provide the following definition: "'*Basic employment*' means employment that brings new or additional income into Virginia and adds to the gross state product, by providing goods or services at least one-half of which will be sold outside of the Commonwealth . . . ."[33] Another example is North Carolina's Jobs Development Investment Grant program, which is a discretionary incentive for new or expanding businesses.[34] Its enabling statute specifies that retail entities are not eligible for these grants.[35]

That state economic development entities generally limit their business recruitment efforts to basic sector industries is important when considering whether certain companies merit investment of public resources. States should consistently apply this limitation across the incentives they provide, including those offered to data centers. Part IV of this Note discusses data centers' role in the economy and why states should reevaluate their strategies to recruit them.

C. Farmshoring: Recruitment to Further Economic Development Social Policy

Prompted by the effects of American companies' outsourcing of jobs to foreign countries with lower costs of labor and the stinging effects of the loss of manufacturing in rural American communities, several state economic development entities initiated "farmshoring" initiatives.[36] Farmshoring (or "rural outsourcing") is "the practice of outsourcing . . . [certain business functions] to nonurban, low-cost areas . . . ."[37] "The two

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[31] *See, e.g.*, *Guidelines for Virginia Investment Partnership Grant*, VA ECON. DEV. P'SHIP AUTH. 1 (2013), http://virginiaallies.org/assets/files/incentives/VIPGuidelines.pdf [hereinafter *VIP Guidelines*].
[32] *Id.*
[33] *Id.* at 2.
[34] *See Jobs Development Investment Grants*, N.C. DEP'T COMMERCE, http://www.thrivenc.com/incentives/financial/discretionary-programs/job-development-investment-grant (last visited Mar. 13, 2014).
[35] N.C. GEN. STAT. ANN. § 143B-437.53(b) (West 2013).
[36] *See* HEIKE MAYER & JOHN PROVO, FARMSHORING IN VIRGINIA: SUMMARY REPORT OF THE ECONOMIC DEVELOPMENT STUDIO @ VIRGINIA TECH 6 (Apr. 2007).
[37] Mary Lacity et al., *Rural Outsourcing: Delivering ITO and BPO Services from Remote Domestic Locations*, IEEE COMPUTER 55 (Dec. 2011).

biggest drivers are low [labor] costs and high [employee] retention rates," as many companies in higher-cost metropolitan areas would routinely lose staff shortly after training them.[38] Farmshoring initiatives are most well known for encouraging companies with existing operations to relocate their call centers from high-cost metropolitan areas to low-cost rural areas rather than to foreign countries. State economic developers targeted many other types of business functions as candidates for their farmshoring initiatives, including software engineering, government contractors,[39] high-level programming, and data-crunching jobs.[40] Virginia promoted a number of successful farmshoring projects, including a business-process outsourcing project in a Shenandoah Valley community that services the U.S. Patent and Trademark Office, and a medical records data center in Southwestern Virginia that services several healthcare practices and hospitals in Virginia and Tennessee.[41]

States' farmshoring initiatives were often job retention measures because they merely sought to keep jobs from being relocated from the state to another country; they did not necessarily involve job creation.[42] Notwithstanding their farmshoring efforts, many states limit even their job retention efforts to those companies that are part of the economic base.[43] Some state economic development entities justified farmshoring as "initiatives to meet [their] mission goals" by meeting "local workforce development goals and provid[ing] skills development in regions needing

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[38] *Id.* at 57.

[39] Ellen McCarthy, *Coal Enclave Lures High-Tech Companies*, HOUSTON CHRON., Jan. 3, 2006, http://www.chron.com/business/technology/article/Coal-enclave-lures-high-tech-companies-1879650.php.

[40] Patrik Jonsson, *Jobs on Farms, Not Abroad*, CHRISTIAN SCIENCE MONITOR, Feb. 23, 2006, http://www.csmonitor.com/2006/0223/p02s01-usec.html.

[41] MAYER & PROVO, *supra* note 36, at 8, 18.

[42] *See generally*, *id.* The following quote substantiates farmshoring's aspects of job relocation: "Rural communities will see benefits from job creation and new investment. At the same time, jurisdictions currently hosting businesses interested in outsourcing can find a silver lining in farmshoring. Efficiencies gained through farmshoring within the same state strengthen firm ties to both locations." *Id.* at 3. Not all projects falling under the banner of farmshoring, however, were pure retention projects. For example, Terremark Worldwide (now Verizon Terremark) announced a new $270 million data center campus in rural Culpeper, Virginia; at the time, the company also had a facility in Herndon, a high-cost area in Northern Virginia. Christie Miller et al., *Culpeper Trades Grapevines for Broadband*, 12 COM. Q. 5 (2007), *available at* http://www.yesvirginia.org/content/pdf/CQ/CQ_Spring_07.pdf.

[43] *See, e.g.*, *VIP Guidelines*, *supra* note 31, at 1 (describing an incentive program designed to facilitate additional capital investments and retain jobs, but not necessarily create new jobs).

economic diversification."[44] Thus, even though some of the companies (or business divisions of certain companies) that these farmshoring initiatives targeted were not in the basic sector, the initiatives could be justified because they furthered related social policy: fulfilling the urgent needs of distressed, often rural communities for employment opportunities and an expanded taxable base.

II. OVERVIEW OF DATA CENTERS

A. Three Categories of Data Centers

Data centers come in many shapes and sizes.[45] They typically house thousands of interconnected computer servers in air-conditioned facilities run by relatively small staffs[46] and enable just about every task that involves the internet including searches, online purchases, and financial transactions, among many others.[47] "Data centers are found in nearly every sector of the economy: financial services, media, high-tech, universities, government institutions, and many others use—and operate—data centers to aid business processes, information management, and communications functions."[48]

There are three general categories of data centers: enterprise, cloud, and colocation (or "tenant-occupied") data centers.[49] "Enterprise" data centers serve a single entity.[50] Large technology companies often use these facilities to support their own operations and/or proprietary web-based

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[44] *Commonwealth Research and Technology (R&T) Strategic Roadmap*, CIT 9 (Nov. 1, 2011), http://www.cit.org/file.aspx?DocumentId=389.

[45] *See, e.g.*, Cade Metz, *Google Chocolate Factory Patents Data Center Navy*, THE REGISTER (Apr. 30, 2009, 12:07 PM), http://www.theregister.co.uk/2009/04/30/google_data_center_navy_patent/; Cade Metz, *Apple Mimics Facebook with High Desert Data Center*, WIRED (Feb. 22, 2012, 2:58 PM), http://www.wired.com/wiredenterprise/2012/02/apple-facebook-data-center/.

[46] For example, Apple's $1 billion data center in Maiden, North Carolina is expected to employ only fifty workers; Facebook's $450 million data center in Forest City, North Carolina is expected to employ only forty-five workers. Gerena, *supra* note 1, at 29.

[47] *See* ARREGOCES & PORTOLANI, *supra* note 2, at 5.

[48] ENERGY STAR REPORT, *supra* note 3, at 4.

[49] *See, e.g.*, *Enterprise Cloud & Managed Services Overview*, WINDSTREAM, http://www.windstreambusiness.com/products/cloud-managed-services (last visited Mar. 13, 2014).

[50] *See* Theophilus Benson et al., *Network Traffic Characteristics of Data Centers in the Wild*, 10TH ACM SIGCOMM CONFERENCE ON INTERNET MEASUREMENT 1, 3–4 (Nov. 1–3, 2010), http://bnrg.cs.berkeley.edu/~randy/Courses/CS294.S13/3.4.pdf.

services.[51] Companies such as Google and Facebook own and operate their own enterprise data centers that enable the various online applications they offer.[52] "Cloud" data centers sell their services to multiple companies.[53] "Tenants [pay] for the amount of comput[ing] and storage resources they require, and are charged on a pay-as-you-go basis."[54] These data centers allow "[u]sers [to] access IT services and data from the cloud without control over the technology infrastructure that supports [them]."[55] Cloud data centers support a variety of functions ranging from proprietary web-based services to simple website hosting.[56] Last, and similar to cloud data centers, there are "colocation" or tenant-occupied data centers, where several companies "locate their IT resources within a colocation provider's data center, yet maintain ownership and management of these resources."[57] These tend to serve businesses in the region where the data center is located which have significant technology needs, but those needs are not so great as to require a standalone data center. To the layperson, colocation data centers can be thought of as the consolidation of smaller offices' on-site server closets into a more efficient and technologically advanced data center that is under one roof.[58]

B. Main Drivers of Data Centers' Location Decisions: Energy and Connectivity

There are many factors that data center operators take into consideration when selecting new sites, including accessibility to highways and airports, proximity to markets and customers,[59] cost of real estate,

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[51] *Id.*
[52] *See* FACEBOOK INC., ANNUAL REPORT FORM 10-K10-11 (Feb. 1, 2013) (describing the relationship between Facebook's technology and services).
[53] *See* Benson et al., *supra* note 50, at 1.
[54] Hitesh Ballani et al., *Towards Predictable Datacenter Networks*, SIGCOMM 1 (Aug. 15–19, 2011), http://research.microsoft.com/pubs/149565/sigcomm11-oktopus.pdf.
[55] BUREAU OF ECON. ANALYSIS, BEA AND FEDERAL IT MANAGEMENT REFORMS 1 (2010), *available at* http://www.bea.gov/about/pdf/omb_25_point_plan_at_bea.pdf.
[56] *See, e.g.*, *Cloud Hosting, Website Hosting and Datacenter Services*, MSTECH, http://www.mstech.com/nh-cloud-hosting-website-hosting-data-center-services.php (last visited Mar. 13, 2014).
[57] ROBERT J. HAFT & PETER M. FASS, 4 TAX-ADVANTAGED SECURITIES § 7:27.50 (2014).
[58] *See* Carolynn Iafrate Kranz & Iris Kitamura, *Taxing Software and Cloud Computing: Yesterday's Law, Today's Technology*, TAX ANALYSTS 737, 740–41 (Dec. 12, 2011).
[59] Generally only for colocation data centers, however, is proximity to customers an important location factor. HAFT & FASS, *supra* note 57 (noting "colocation providers . . . typically must locate facilities in every market where they operate").

tax and regulatory climate, economic development incentives, and the cost of electricity.[60] Each of these has an effect on a data center's bottom line, with the cost of electricity and access to robust broadband connectivity among the top concerns.[61] Since data centers demand fail-safe operation, reliable access to electricity and fiber optic connectivity are considered critical.[62]

Sometimes, the lack of adequate connectivity is the only thing keeping a region from recruiting data centers. For example, in Virginia, business and telecom leaders created the Mid-Atlantic Broadband Cooperative ("MBC") to design and deploy a robust fiber optic network in Southern Virginia, a region that had suffered "major loses in furniture manufacturing, textiles, manufacturing and tobacco production."[63] The development of this valuable network in a region that suffered serious employment losses helped prompt technology companies such as Microsoft and Hewlett-Packard to develop data centers in its territory.[64]

Given the large amount of electricity data centers consume, "energy cost is one of the biggest drivers of data center location decisions . . . ."[65] DatacenterDynamics released survey results for 2011 that indicated "energy cost and availability is the #1 worry of data center operators."[66] Not

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[60] Larry Gigerich, *Making the Data Center Location Decision*, TMCNEWS (May 31, 2012), http://www.m2mevolution.com/news/2012/05/31/6338113.htm.

[61] *2011 Industry Census: Global Market Profile Report*, DATACENTERDYNAMICS.COM 2 (Sept. 2011), http://www.dcd-intelligence.com/content/download/4197/53594/file/Census_marketprofiles_developmentindex.pdf.

[62] Redundant access refers to the provision of service by more than one electric utility or telecommunications provider. Freeman, *supra* note 11.

[63] *History of MBC*, MID-ATL. BROADBAND COOP, http://www.mbc-va.com/history-of-mbc (last visited Mar. 13, 2014). The MBC benefitted from significant public investment, including grants from the Virginia Tobacco Indemnification and Community Revitalization Commission, the U.S. Economic Development Administration, and the American Recovery and Reinvestment Act. *Id.* The Old Dominion Electric Cooperative also made a significant investment into the MBC. Hudgins Interview, *supra* note 15.

[64] *Microsoft Announces Expansion of Modular Data Center Site in Mecklenburg County*, MID-ATL. BROADBAND COOP, http://www.mbc-va.com/news/details/ID/21 (last visited Mar. 13, 2014) ("Mid-Atlantic Broadband is pleased that our diverse, open-access fiber optic network is one factor helping attract private sector investments to the region that are revitalizing economic development in Southern Virginia."); *see also* Dan Campbell, *Wired for Success*, 74 RURAL COOP. 18, 18–21 (July/Aug. 2007) (describing MBC's collaborative efforts to recruit a $600 million data center to rural Clarksville, Virginia), *available at* http://www.rurdev.usda.gov/rbs/pub/jul07/Wired.htm.

[65] Freeman, *supra* note 11.

[66] *See* Ajay Garg, *Improve Energy Efficiency and Remote Accessibility in Your Datacenter*, INTEL (2013), http://www.datacenterworld.com/fall2013/account/Uploader/uploader_files/show/258.

surprisingly, economic developers seeking to recruit data centers prominently market the affordability of electricity rates in their regions.[67] As this Note discusses in Part IV, some states have authorized their energy regulators to allow utilities to provide discounted electricity rates to certain businesses, programs from which data centers frequently seek to benefit.

C. Data Centers' Environmental Effects

Although they do not come with the smokestacks or effluent water that industrial facilities do, day-to-day operation of data centers brings significant environmental impacts that must be considered. EPA estimated in 2007 that data centers consumed almost 61 billion kilowatt-hours of electricity, amounting to almost two percent of all electricity consumption in the Unites States.[68] The U.S. Energy Information Administration ("EIA") reported that more than eighty percent of the greenhouse gas emissions in the United States originate from energy-related sources.[69] Consequently, data centers' energy consumption undoubtedly contributes to the nation's greenhouse gas emissions. Some have even called for data centers to be subject to greenhouse gas reporting standards.[70]

Not surprisingly, increased electricity usage from a given business typically goes unnoticed. Communities may find it difficult to appreciate any environmental effects from certain neighbors' high usage since it is not felt locally or immediately. In the long run, however, continued expansions of data centers, practical limits on their energy efficiency and conservation efforts, and their preference for cheaper (and often fossil-based) energy sources will bring tangible environmental consequences to the regions where they are located.[71]

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[67] *See, e.g.*, *Nebraska Is Wired for Business*, NEB. DEP'T ECON. DEV., http://www.neded.org/business/why-nebraska/major-industry-sectors-companies/information-services-and-datacenters (last visited Mar. 13, 2014) (noting "[a] Nebraska location provides access to electric rates for industrial service that are, on average, 42 percent less than the U.S. average . . . .").

[68] ENERGY STAR REPORT, *supra* note 3, at 7.

[69] U.S. ENERGY INFORMATION ADMINISTRATION, WHERE GREENHOUSE GASES COME FROM (2012), *available at* http://www.eia.gov/energyexplained/index.cfm?page=environment_where_ghg_come_from.

[70] *See generally* Alexandra L. Pichette, Note, *Becoming Positive About Being Carbon Neutral: Requiring Public Accountability for Internet Companies*, 14 VAND. J. ENT. & TECH. L. 425 (2012).

[71] Greenpeace collected (admittedly sometimes unconfirmed) data indicating that companies such as Amazon Web Services, Apple, and Hewlett-Packard rely on coal energy

Many data centers seek to balance their bottom line while mitigating their environmental impact by using renewable energy sources and aggressively developing and implementing energy efficiency and conservation measures. Using "green energy from renewable sources . . . is more likely to increase [data centers' energy costs]. So an area serviced by a utility that provides renewable energy as part of its mix . . . may lose out to an area with less costly energy that is not sustainable."[72] Since electricity is likely to be cheaper in areas where traditional sources such as nuclear and coal are predominant, data centers are more likely to locate in those areas.[73] Data center operators typically pay more per square foot for their facilities than other types of uses because of the extensive infrastructure and equipment that are required.[74] Nonetheless, "[o]ver the lifetime of a [d]ata [c]enter, those initial construction and deployment costs are ultimately dwarfed by . . . operational expenses, led first and foremost by its power bills."[75]

In addition to plentiful electricity, data centers' need for *reliable* electricity brings additional environmental consequences.[76] In order to provide the uninterrupted service that users demand, many data center operators install diesel generators that can provide power temporarily during unexpected outages.[77] "Diesel generators . . . aren't known for

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sources for 33.9%, 55.1%, and 49.7%, respectively, to power their data centers. Cook, *supra* note 12, at 7. Greenpeace's report also noted "[i]f IT companies continue to rely on dirty sources of energy to power the cloud, the cloud itself will begin to have a measurable negative impact on our environment and communities." *Id.* at 6.

[72] Freeman, *supra* note 11.

[73] Cook, *supra* note 12, at 26, 32.

> Facebook's initial two data center investments in Oregon and North Carolina . . .were both located in areas where over 60 percent of the electricity came from coal . . . North Carolina and Virginia have emerged as two of the fastest growing locations for cloud computing. Unfortunately, both states have some of the dirtiest electrical grids in the United States, relying heavily on nuclear energy and coal from mountain top removal.

Id.

[74] ALGER, *supra* note 13, at 6.

[75] *Id.*

[76] *See* Freeman, *supra* note 11.

[77] *See* W. PITT TURNER IV ET AL., TIER CLASSIFICATIONS DEFINE SITE INFRASTRUCTURE PERFORMANCE, UPTIME INST. 4, 5 (2008). For example, see Amazon Web Service's comment after a severe summer storm caused prolonged outages: "We'd like to share more about the service disruption which occurred . . . in the US East-1 Region. The event was triggered during a large scale electrical storm which swept through the Northern Virginia area . . . . All utility electrical switches in both datacenters initiated transfer to

being particularly eco-friendly because they emit carbon monoxide, hydrocarbons, nitrogen oxides, and particulate matter . . . . [A]ir quality agencies in certain regions . . . restrict how many hours . . . generators can operate or [the] level of emissions they [may] produce."[78] Given their size and the resulting particulate matter that these diesel engines exhaust, many states require data centers to obtain emission permits.[79] Sometimes the emissions that result from a data center's use or testing of its backup generators have caused difficulty with its neighbors.[80] Although it is unlikely that more than only those neighbors within the closest proximity would notice exhaust from a data center's generators, it is noteworthy that many states' regulatory agencies require them to obtain stationary air pollution source permits to operate them.

D. Certain Data Center Operators' Laudable Environmental Efforts

In response to public awareness of data centers' environmental impacts and to proactively mitigate them, some technology companies have set goals to reduce the carbon footprints of their data centers, both through capturing efficiencies and relying more on renewable energy sources.[81] Some of the largest technology companies in the world have announced plans to reduce the environmental impacts of their data centers in various ways,[82] including designing new hardware that operates

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generator power." Press Release, Amazon Web Services, Summary of the AWS Service Event in the US East Region (July 2, 2012), *available at* http://aws.amazon.com/message/67457/.

[78] ALGER, *supra* note 13, at 116.

[79] *See generally* James Glanz, *supra* note 8; *FAQs: Microsoft Columbia Data Center Expansion Project*, WASH. DEP'T OF ECOLOGY (Dec. 2010), *available at* https://fortress.wa.gov/ecy/publications/publications/1002048.pdf ("Microsoft needs an Ecology permit to install more diesel-powered generators. The data centers have 46 diesel-powered backup generators for use during power failures. Each generator produces about two megawatts of electricity. The generators also produce diesel engine exhaust particles, a toxic air pollutant. Health studies show this pollutant can cause serious health problems.").

[80] *See* Glanz, *supra* note 8 (noting "[o]ne clause in the new permit [for the diesel generators at Microsoft's Quincy, Washington data center] . . . ordered Microsoft to meet with administrators of the nearby Mountain View Elementary School and 'provide the school administrators with a direct telephone contact to one of the Columbia Data Center managers' as well as a schedule of when it would test generators.").

[81] *See* Cook, *supra* note 12, at 6.

[82] *See id.* at 15; *see, e.g.*, *Google Green*, GOOGLE, http://www.google.com/green/ (last visited Mar. 13, 2014) ("We're greening our company by using resources efficiently and

more efficiently (Google),[83] building renewable energy generation facilities on-site (Apple),[84] and supporting renewable energy development through the purchase of Renewable Energy Credits (Microsoft).[85] Perhaps motivated by both their desire to reduce their carbon footprints and respond to increasingly aware consumers, these companies have also encouraged some utilities to increase the proportion of renewable energy that is available to their data centers.[86] These indirect, environmentally conscious efforts, by which data center operators use their market power to encourage their suppliers to adopt more environmentally sensitive practices, are just as important as operators' own efforts.

In 2007, IBM was one of the early leaders among technology companies when it "announced a $1 billion per-year initiative, Project Big Green, to increase Data Center energy efficiency, both as a service offering to customers and for its own more than 8 million square feet . . . of hosting space."[87] IBM realized that a "data center energy crisis" was on the horizon and that "[m]any data centers have now reached full capacity, limiting a firm's ability to grow and make necessary capital investments."[88] Commendably, Project Big Green sought "to double the computing capacity

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supporting renewable power."); *Facebook Sustainability*, FACEBOOK, http://newsroom.fb.com/sustainability.aspx (last visited Mar. 13, 2014) ("2010 marked an awakening for Facebook's sustainability efforts, initiating a clear focus on protecting the environment through use of the Facebook platform, technological innovation in the data center, partnerships, and our own day-to-day operations.").

[83] Cade Metz, *Mystery Google Device Appears in Small-Town Iowa*, WIRED (Sept. 10, 2010, 6:30 AM), http://www.wired.com/wiredenterprise/2012/09/pluto-switch/ ("With its custom hardware, Google aims to improve the operation of its data centers, but it also seeks to reduce costs. Because it operates at such an enormous scale . . . it can save vast amounts of money by reducing power consumption and stripping hardware to its bare essentials.").

[84] John Murawski, *Apple's Data Center in Maiden Gets Approval for Fuel-Cell Plant*, NEWS OBSERVER (May 24, 2012), http://www.newsobserver.com/2012/05/24/2085601/apples-green-data-center-in-maiden.html.

[85] *See* Todd Woody, *Google Signs Utility Deal to Power Data Center with Wind Energy*, FORBES (Sept. 26, 2012, 1:00 PM), http://www.forbes.com/sites/toddwoody/2012/09/26/google-signs-utility-deal-to-power-data-center-with-wind-energy/ (quoting Gary Cook's characterization of the purchase of renewable energy credits or carbon offsets as "mask[ing]" fossil-based energy usage).

[86] *See, e.g.*, *Application of Virginia Elec. & Power Co.*, 2013 WL 208929, at *1–19 (Va.S.C.C. 2013) (showing Dominion Virginia Power's application to provide a voluntary renewable generation pilot program through which large users can purchase a larger share of energy generated from renewable sources).

[87] ALGER, *supra* note 13, at 31.

[88] Press Release, IBM, IBM Unveils Plan to Combat Data Center Energy Crisis (May 10, 2007), *available at* http://www-03.ibm.com/press/us/en/pressrelease/21524.wss.

of its data centers within the next three years without increasing power consumption or its carbon footprint."[89]

Many other companies have also made meaningful efforts to mitigate the environmental impacts of their data centers. For example, Microsoft recently decided to forego backup diesel generators at its new data processing facilities.[90] Comments from a Microsoft representative indicated that because of the number of data centers it has and their ability to work with one another, backup generators were not needed because traffic at an affected facility could be seamlessly shifted to an operational facility.[91] Despite these companies' laudable efforts, however, efforts to reduce the marginal amount of electricity data center facilities consume will be futile if the industry continues to grow at its current rate.[92]

III. ECONOMIC DEVELOPMENT INCENTIVES FOR DATA CENTERS

Several states have implemented various economic development incentives designed to recruit data centers. This section reviews the most common incentives, identifies any problematic or laudable characteristics, and assesses to what extent their structure furthers the core economic development purpose of building a state's economic base. This Note focuses on the incentives offered in Iowa, Mississippi, Nebraska, New York, North Carolina, Washington, and Virginia since each offers a sales tax exemption for certain data centers and large enterprise data centers have located in each of these states. A few examples of outliers from other states are included for illustration.

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[89] *Id.*

[90] *See* Penny Jones, *Microsoft: Thinking Small for Resiliency*, DATACENTER DYNAMICS (Nov. 15, 2012), https://www.datacenterdynamics.com/focus/archive/2012/11/microsoft-thinking-small-resiliency.x

[91] *Id.* ("During a major storm, smart algorithms can decide in the blink of an eye to migrate users to another data center because it is less expensive than starting the generators."). At least in isolation, the technological development that has allowed Microsoft to forego generators stands in stark contrast to Cook and Van Horn's prediction that technological development would only increase energy consumption. *See* Gary Cook & Jodie Van Horn, *How Dirty Is Your Data?*, GREENPEACE INT'L 14 (May 24, 2011), http://www.greenpeace.org/international/Global/international/publications/climate/2011/Cool%20IT/dirty-data-report-greenpeace.pdf.

[92] *See* Cook & Van Horn, *supra* note 91, at 15 ("Energy efficiency alone will, at best, slow the growth of the sector's footprint. . . . [I]mproved IT efficiency will likely increase its environmental footprint even beyond what is currently projected without a shift away from dirty sources of energy.").

A. Protecting Public Investment: State's Return on Investment Analyses

Before discussing the details of these various incentive programs, it is important to note that most states conduct some form of return on investment analysis prior to providing certain incentives.[93] These analyses seek to predict the net new revenue that will flow to a state based on the new jobs and capital investments an economic development project is expected to bring.[94] They are important because they provide guidance as to the amount of incentives that are appropriate to award to a given project and they ensure the state is making a prudent investment. The former of these reasons, however, is only relevant with respect to discretionary incentives, those that require the state to determine whether to make an award and in what amount. With statutory (or by-right) incentives, policy makers must be sure to set appropriate thresholds to ensure that projects that at least meet those thresholds will generate net new tax revenue because the benefits cannot be withheld.[95]

The most common incentive states provide to data centers is a sales and use tax exemption, most of which are by-right and their enabling statutes foreclose the opportunity for states to withhold them.[96] Some argue that such exemptions should not be scrutinized as closely as the payment of cash grants because they represent forgone tax revenue: revenue that would not have come to the state but for the project.[97] While debate is likely to continue on this topic for years to come, the fact remains

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[93] *E.g.*, JLARC REPORT, *supra* note 29, at 72 (". . . [Virginia Economic Development Partnership Authority] staff calculate the return on investment (ROI) of each project to determine at what point its financial benefits are projected to offset the cost of proposed State incentives . . . . The VEDP ROI model accounts for the impact to State revenue resulting directly from the project as well as the additional revenue spurred indirectly by the project throughout the State . . . .").

[94] For a summary of arguments in favor of economic development incentives based on their benefits, see Kathleen E. McDavid, *Giving State Tax Incentives to Corporations: How Much is Too Much?*, 7 S.C. J. INT'L L. & BUS. 257, 262–68 (2011).

[95] This is so for practical reasons—if a company can claim an incentive merely by meeting the statutory criteria, then the state has no way of withholding it.

[96] *See* Michael A. Harris et al., *Tax Credit Trends: Industry and Geography*, PRICEWATERHOUSE COOPERS 3–6 (Sept. 2013), http://www.publications.pwc.com/DisplayFile.aspx?Attachmentid=6951&Mailinstanceid=28460.

[97] Put otherwise, a state should not consider the forgoing of revenue it otherwise would not have as an expense. *See* Gillian Reynolds & C. Eugene Steuerle, *Tax Expenditures: Why Are They Controversial?*, TAX POLICY CENTER (July 2009), *available at* http://www.taxpolicycenter.org/briefing-book/background/expenditures/controversial.cfm.

that legislatures generally must take such tax expenditures into consideration when they are composing their budgets.[98] Thus, in many states, regardless of whether an incentive is provided by means of a direct cash payment or the forgoing of revenue, the state's bottom line must be adjusted downward to account for the decreased revenue.[99]

B. Tax Exemptions for Data Centers

Many states provide sales and use or personal property tax exemptions for the electricity or equipment used in new or expanding data centers.[100] These exemptions typically require a minimum amount of new capital investments, but only some require new job creation in order to qualify.[101] Statutory capital investment requirements range from as little as $3 million[102] to as much as $225 million.[103] Some states require the qualifying investment be made in exempt property (e.g., computer equipment related to the operation of the data center as opposed to real estate) while others do not restrict it.[104] Some states do not set minimum job creation requirements, while others do and even attach criteria requiring minimum wages or fringe benefits.[105]

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[98] *Compare* VA. DEP'T OF TAXATION, 2010 FISCAL IMPACT STATEMENT: 2010 S.B. 130 2 (Jan. 1, 2010), *available at* http://lis.virginia.gov/cgi-bin/legp604.exe?101+oth+SB130F161+PDF (noting a $3.42 million revenue reduction in Fiscal Year 2011 attributable to a sales tax exemption for one data center), *with* NEB. LEGIS. FISCAL OFFICE, 2012 L.B. 1118 FISCAL NOTE (Feb. 24, 2012), *available at* http://nebraskalegislature.gov/bills/view_bill.php?DocumentID=16082 (finding no net negative fiscal impact resulting from a new sales tax exemption for data centers given theanticipation of new revenues from a large project locating in the state).

[99] *See supra* note 98.

[100] *E.g.*, IOWA CODE ANN. § 423.3(95)(a)(1) (West 2013); N.C. GEN. STAT. ANN. § 105-164.3(8e) (West 2014); VA. CODE ANN. § 58.1-609.3 (17) (West 2013); WASH. REV. CODE ANN. § 82.08.986(1) (West 2012).

[101] *Compare* IOWA CODE ANN. § 423.3(95)(a)(1) (West 2013) (lacking a new jobs requirement), *with* VA. CODE ANN. § 58.1-609.3(18) (West 2013) (requiring the creation of twenty-five to fifty new jobs).

[102] NEB. REV. STAT. § 77-5725(1)(b) (West 2013).

[103] N.C. GEN. STAT. ANN. § 105-164.3(8e) (West 2014).

[104] *E.g.*, NEB. REV. STAT. § 77-5725(1)(b) (West 2013). Requiring the investment to be made in exempt property may ensure that the facility's predominant function is to serve as a data center, but this approach has its drawbacks. Given that the exempt property is necessarily exempt from sales tax, data centers should be encouraged to invest in taxable property in order to improve the state's return on investment.

[105] *Compare* IOWA CODE ANN. § 423.3(95)(a)(1) (West 2013) (requiring no job creation), *with* VA. CODE ANN. § 58.1-609.3(17) (West 2013) (requiring 50 new jobs that pay 150% of the

Troublingly, most statutes do not have provisions that require qualifying data centers *maintain* their capital investments or new jobs.[106] As a result, once a project has demonstrated that it has reached the statutory minimum criteria, it continues to be able to claim the exemption while reducing its investment or number of employees. This is not sound policy and states should do a better job to protect their investments of forgone revenue. States whose statutes lack maintenance provisions should revise them to require data centers to maintain a minimum amount of new jobs and capital investments, or at the very least provide for the rescission of the sales tax exemption should the project fall below the minimum thresholds.

Some states' statutory schemes demonstrate a preference for recruiting data centers to certain geographic areas.[107] Virginia's statute reduces the capital investment and job creation requirements for localities with high unemployment rates, while North Carolina's prohibits the award of certain incentives altogether to projects locating in relatively affluent jurisdictions.[108] Mississippi offers a 100 percent exemption from its sales and use tax for qualified data centers that locate in localities with high unemployment rates and low per capita income, but only a fifty percent exemption for those locating in less distressed communities.[109] Washington takes a different approach by providing its exemption only to data centers that locate in a "rural county."[110] Location preferences that reduce the amount of capital investments or new jobs that a data center must create in order to access incentives target the availability of these incentives to those projects that are meaningful to the region. That is, adding twenty-five new jobs in a distressed, rural area is likely to have

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prevailing average local wage), *and* N.C. GEN. STAT. ANN. § 105-187.51C(a)(3) (West 2013) (requiring eligible jobs to have minimum health insurance requirements).

[106] *Compare* VA. CODE ANN. § 58.1-609.3(18) (West 2013), *and* NEB. REV. STAT. § 77-5725 (West 2013) (requiring no maintenance of jobs or capital investment), *with* MISS. CODE. ANN. § 57-113-23 (West 2013) (requiring maintenance of jobs, but not capital investment).

[107] *Compare* VA. CODE ANN. § 58.1-609.3(18) (West 2013) (reducing the necessary number of new jobs that a data center must create if it locates in a community with an unemployment rate 150% of the statewide average), *with* IOWA CODE ANN. § 423.3, *and* NEB. REV. STAT. § 77-5725 (providing no location preference).

[108] VA. CODE ANN. § 58.1-609.3(18) (West 2013); N.C. GEN. STAT. ANN. § 105-164.3(8e) (West 2014).

[109] MISS. CODE. ANN. §§ 27-65-101(1)(ff), (3) (West 2013).

[110] WASH. REV. CODE ANN. § 82.08.986(3)(d)(i)(A) (West 2012) (citing the definition of "rural county" found in § 82.14.370, which defines such a county as one with a population density of less than 100 people per square mile).

a proportionately larger positive effect on reducing unemployment compared to a dense, affluent suburban area.

These location preferences have the potential to embody sound social policy in a few ways. First, they recognize that rural or distressed communities tend to be in need of economic diversification and job growth. Second, they promote a meaningful, but not overwhelming, amount of job creation for these communities. Third, they base state subsidies on communities' needs based on their demographic characteristics instead of blindly recruiting an industry regardless of where it locates. This latter concept harmonizes with the discussion of state economic development entities' farmshoring initiatives discussed above in Part I.C.

The absence of location preferences for these data center incentives leads to a recruitment strategy that takes for granted that each qualifying project merits public investment and incorrectly presumes that data centers are part of the basic sector. As an ironic example, Nebraska provides tax credits to certain businesses only if a given business "derives at least seventy-five percent or more of the sales or revenue . . . relating to the project from sales to consumers who are . . . located outside the state," but the provisions of the same code section that grant the same credits to data centers speak only to data centers' general function, not their role in the state economy or proportion of outside sales.[111] Colocation and other data centers that merely house the technology infrastructure small businesses would otherwise have on-site under one roof are most clearly not part of a state's economic base.[112] Absent a mission-based justification, as was the case with states' farmshoring initiatives, providing location-neutral incentives to data centers cannot be justified as sound economic development policy. At least on this feature, the statutes of Mississippi, North Carolina, and Washington appear to be the most thoughtful. Other states whose data center incentives lack such location preferences should adopt them.

C. Case Study: A Race to the Bottom in Virginia?

Virginia enacted its first sales tax exemption for data centers in 2008.[113] Although it provided an exemption for a relatively broad range

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[111] NEB. REV. STAT. § 77-5715(f) (West 2013).

[112] Kranz & Kitamura, *supra* note 58, at 740–41 (explaining that instead of acquiring, servicing and maintaining in-house server rooms, businesses can outsource these services to cloud data centers for less money).

[113] H. 1388, Ch. 558, 2008 Leg., Reg. Sess. (Va. 2008), *available at* http://lis.virginia.gov/cgi-bin/legp604.exe?081+ful+CHAP0558.

of computer equipment, it was limited to data centers agreeing to locate in certain narrow geographic areas and during a narrow time period.[114] The exemption specifically excluded certain computer software used in the data center.[115] The Virginia General Assembly broadened the exemption to apply statewide during its 2009 session,[116] and yet further during its 2010 session to include certain software and additional equipment used in data centers.[117]

In 2011, the Commissioner of the Virginia Department of Taxation issued a ruling regarding the sales tax exemption for data centers as it was last modified by the General Assembly in 2010.[118] The Commissioner ruled that if an entity made the statutorily required $150 million investment in a data center, it could contract with various tenants of that data center who could collectively create the necessary 50 new jobs.[119] While heretofore the exemption was effectively limited to enterprise and cloud data centers because a single entity needed to create the necessary investments and jobs, the 2011 ruling opened the door for colocation data centers to access the exemption.[120] Perhaps not surprisingly, the Virginia General Assembly adopted legislation during its 2012 session that codified this ruling and specifically allowed colocation data centers to access the exemption.[121] This legislation provided that a data center operator could agree with its tenants to aggregate both new jobs and capital investments in order to meet the necessary thresholds, and that both the operator and its tenants could benefit from the sales tax exemption.[122]

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[114] *Id.* (limiting eligibility for the exemption to localities with an unemployment rate above 4.9% during 2007 and signing a memorandum of understanding between January 1 and December 31, 2008).
[115] *Id.*
[116] S. 944, Ch. 833, 2009 Leg., Reg. Sess. (Va. 2009), *available at* http://lis.virginia.gov/cgi-bin/legp604.exe?091+ful+CHAP0833.
[117] H. 302, Ch. 826, 2010 Leg., Reg. Sess. (Va. 2010), *available at* http://lis.virginia.gov/cgi-bin/legp604.exe?101+ful+CHAP0826.
[118] Retail Sales and Use Tax Data Center Exemption, Doc. No. 11-183, Tax Comm'r of Va. (Oct. 27, 2011) (ruling on retail sales and use tax exemption for certain data centers), *available at* http://www.policylibrary.tax.virginia.gov/OTP/Policy.nsf (search for document no. "11-183").
[119] *Id.*
[120] This ruling did not completely open the door, however, since only the entity that entered into the required memorandum of understanding with Virginia's economic development entity could claim the exemption. *Id.*
[121] H. 216, Ch. 655, 2012 Leg., Reg. Sess. (Va. 2012), *available at* http://lis.virginia.gov/cgi-bin/legp604.exe?121+ful+CHAP0655.
[122] *Id.*

Most recently, the General Assembly adopted legislation during its 2013 session that allows local governments to create a separate classification for certain equipment used in a data center in order to apply a reduced personal property tax rate.[123] Under this new authorization, a locality could elect to tax qualifying data center equipment at as low as a zero percent rate.[124] Although the focus of this Note is on the incentives that states provide to data centers, it is important to note that localities too are actively joining the competition to recruit data centers. While such local tax incentives are attractive, their value typically pales in comparison to the sales tax exemptions that states offer.

Virginia has historically had a very strong presence of internet related businesses, with some asserting that more than half of the world's internet traffic runs through the state.[125] Given this concentration, it is not surprising that data center operators have a strong presence in Virginia. Colocation data centers in particular have a very strong presence in Northern Virginia given its proximity to the nation's capital and numerous defense contractors. A recent Google Maps search indicated that more than twenty-five colocation data centers are located in that area, and plenty of others probably exist but lack a published presence for security reasons.[126] While little is known about the size of these colocation data centers, their proliferation in Virginia occurred well before the enactment of the legislation discussed above. Consequently, Virginia policymakers (and others in similarly situated states) should strongly reconsider the incentives provided to these colocation data centers because it does not appear that it was necessary to provide incentives in order to recruit them. Instead, they locate near their customers. With the availability of a generous sales and use tax exemption and the prospect of paying reduced personal property taxes to localities, economic developers will need to work harder to justify the remaining benefits these facilities provide.

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[123] *See* H. 1699, Ch. 271, 2013 Leg., Reg. Sess. (Va. 2013); S. 1133, Ch. 393, 2013 Leg., Reg. Sess. (Va. 2013).

[124] *Id.*

[125] *See* Juliet Eilperin, *Data Centers in Va. and Elsewhere Have Carbon Footprint, Report Says*, WASH. POST, Apr. 17, 2012, http://articles.washingtonpost.com/2012-04-17/national/35452644_1_data-centers-dominion-virginia-power-amazon-web-services (quoting Thomas Farrell II, the CEO of Dominion Resources).

[126] Map of Northern Virginia Colocation Data Centers, GOOGLE MAPS, http://maps.google.com (search for "Fairfax, Virginia"; click "Zoom Out" three times; then search for "colocation data centers").

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Despite this criticism, there are success stories to be told. One project in Virginia that benefitted from various incentives is a good example of such a success story in a distressed rural area. In August 2010, Microsoft announced that it would establish a data center in a rural Virginia community where it would invest up to $499 million and create fifty new jobs.[127] Not including the value of its sales and use tax exemption, Virginia provided almost $7 million worth of cash grants, and the locality where the project located agreed to provide almost $18 million worth of grants and in kind services.[128] Given this unusually generous amount of incentives, the state's return on investment was dismal; it expected to meet its break-even point in more than ten years.[129] In January of 2013, however, Virginia successfully competed for a major expansion of this data center in which Microsoft will invest an additional $348 million and create thirty additional jobs.[130] Here, the state contributed a significantly more modest package of incentives, about $2.2 million, only $200,000 of which come from Virginia's general fund.[131] If things go as planned, a three-quarters of a billion dollar investment by a Fortune 100 company will be located in an area dogged by high unemployment and poverty resulting from a deteriorated manufacturing base. It is difficult to argue that this is not a coup for the region.

IV. THE PROVISION OF REDUCED ELECTRICITY RATES TO DATA CENTERS

Many states have responded to how important electricity costs are in business decisions by authorizing ways to provide electricity at reduced

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[127] *See* Press Release, Office of Governor McDonnell, Governor McDonnell Announces Microsoft to Locate Major Data Center in Mecklenburg County (Aug. 27, 2010) [hereinafter Major Data Center], *available at* http://www.highbeam.com/doc/1G1-235965607.html.

[128] *See* Governor's Development Opportunity Fund Performance Agreement between Mecklenburg County, Virginia, Microsoft Corporation, and the Industrial Development Corporation of Mecklenburg County, Virginia § 3 (Oct. 8, 2010).

[129] *Id.* The "break-even" point is the point by which the new tax revenues the project is expected to generate will exceed the value of the incentives the granting jurisdiction provides. *Id.*

[130] *See* Press Release, Office of Governor McDonnell, Governor McDonnell Announces Microsoft Expansion in Mecklenburg County (Jan. 30 2013) [hereinafter Microsoft Expansion], *available at* http://www.mbc-va.com/news/details/ID/211637.

[131] *See id.*; TOBACCO INDEMNIFICATION AND COMMUNITY REVITALIZATION COMM'N: FY 2013 APPROVED BUDGET, STATE OF VIRGINIA (2012), http://www.tic.virginia.gov/pdfs/Budget/FY2013ApprovedBudget_public.pdf.

rates to certain commercial customers. When implemented properly, these programs serve important social and economic development policies by providing a tool to directly address certain companies' operating costs and by encouraging job retention and creation. Some states provide the discounted energy directly through publicly owned power authorities.[132] Other states have authorized their energy regulators to approve private utilities' requests to provide electricity at reduced rates to certain customers,[133] or created incentive programs that allow regulators to approve these reduced rates in exchange for companies' new capital investment and job creation (or retention) commitments.[134] By no means are these programs limited to data centers, but many data centers have benefitted from them.[135]

A. Overview of the States Schemes

Data centers are attractive customers for energy providers. When there is more than one power provider in an area, utilities often compete for large users' business because of the revenue they provide.[136] Data centers are particularly attractive customers not just because of the volume of electricity they purchase, but also because of the consistency of their consumption.[137] They have a desirable load factor that can help stabilize the energy transmission system, thereby promoting reliability.[138] "Some industrial power customers . . . have . . . inconsistent [ ] energy demands,

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[132] *E.g.*, Recharge New York Power Program, N.Y. ECON. DEV. LAW § 188-a(a)(3) (McKinney 2011).

[133] For example, the Code of Virginia provides "[T]he [State Corporation] Commission may approve . . . special rates, contracts or incentives to individual customers or classes of customers where it finds such measures are in the public interest." VA. CODE ANN. § 56-235.2 (2013).

[134] *See, e.g.*, CAL. PUB. UTIL. CODE § 740.4(e)(1) (West 2014) (providing for "discriminatory" economic development electricity rates in defined economic development areas); DEL. CODE ANN. TIT. 26, § 303(d)(1) (West 2014) (authorizing preferential electricity rates for new or expanding customers who create at least twenty-five jobs or make an investment of at least two million dollars); N.M. STAT. ANN. § 62-6-26(A) (West 2013) (providing for the provision of special rates for new and expanding customers for economic development purposes).

[135] *See* Microsoft Expansion, *supra* note 130.

[136] Hudgins Interview, *supra* note 15.

[137] Katie Fehrenbacher, *The Story Behind How Apple's iCloud Data Center Got Built*, GIGAOM.COM (July 12, 2012, 12:00 AM), http://gigaom.com/2012/07/12/the-story-behind-how-apples-icloud-data-center-got-built/. Data centers' consistent energy consumption stands in contrast to other industrial users whose consumption may slow or nearly stop when a shift stops or workers leave the office. Hudgins Interview, *supra* note 15.

[138] Hudgins Interview, *supra* note 15.

which can be hard for utilities to predict. Data centers needs . . . are mostly predictable. They also use power 24/7. Utilities like both of these features."[139] Since data centers typically consume a steady volume of electricity around the clock, they are desirable customers because they allow generation facilities to run more efficiently when they run at reduced capacity during off-peak times.[140]

The State of New York's ReCharge New York Program ("ReCharge") offers particularly aggressive electricity incentive programs.[141] ReCharge allocates 910 megawatts ("MW") of electricity, half of which the New York Power Authority's ("NYPA") hydroelectric facilities generate and the other half of which the NYPA procures otherwise.[142] An appointed panel reviews competitive applications on criteria such as job creation or retention, capital investment, and certain energy efficiency measures.[143] New York provided discounted electricity through ReCharge

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[139] Fehrenbacher, *supra* note 137.

[140] Hudgins Interview, *supra* note 15. While power providers find these "off peak" demand characteristics attractive, data centers's constant consumption also means that they consume just as heavily during peak times. *Id.* Lawrence Berkeley National Labs ("LBNL") conducted a study in 2012 to identify demand management strategies that could help mitigate data centers' energy consumption during peak periods. *See* GIRISH GHATIKAR ET AL., DEMAND RESPONSE OPPORTUNITIES AND ENABLING TECHNOLOGIES FOR DATA CENTERS, ERNEST ORLANDO LAWRENCE BERKELEY NATIONAL LABORATORY (2012). LBNL worked with four different data centers in California and found that implementing measures such as delaying data centers' backup functions until off-peak times and better managing cooling resources could reduce their peak demand by twenty to thirty percent. *Id.* at 1. Measures such as these are sometimes referred to as "peak shaving" measures and their implementation saves a significant amount of money because they help avoid the need to either use natural gas peaking facilities during peak periods or procure energy on the spot market (in which energy providers sell surplus energy, often at a higher cost). Hudgins Interview, *supra* note 15.

[141] *See* Recharge New York Power Program, N.Y. ECON. DEV. LAW § 188-a (McKinney 2011); N.Y. POWER AUTH., 2011 REPORT TO THE GOVERNOR AND LEGISLATIVE LEADERS ON POWER PROGRAMS FOR ECONOMIC DEVELOPMENT (Apr. 2012), *available at* http://www.nypa.gov/services/economicdev/2011FinalReport/2011_Annual_Report_to_Gov.htm (providing data on New York's Economic Development Power, Power For Jobs, ReCharge New York, and Expansion Power programs, among others).

[142] *What Is ReCharge New York?*, N.Y. POWER AUTH., http://www.nypa.gov/RechargeNY/default.htm (last visited Mar. 13, 2014).

[143] N.Y. ECON. DEV. LAW § 188-a(c) (McKinney 2011). With respect to these efficiency measures, subsection (c)(ix) provides the panel will review:

> the extent to which the applicant has invested in energy efficiency measures, will agree to participate in or perform energy audits of its facilities, will agree to participate in energy efficiency programs of the authority, or will commit to implement or otherwise make tangible

for data center projects including Yahoo!, which received 17 MW for its $300 million, 140-job data center facility in Lockport, and Avon Cosmetics, which received 1,020 kilowatts ("kW") for its corporate office and data center facilities in Rye.[144] An application to provide Verizon with 250MW for its $4.5 billion, 200-job data center in Somerset was approved, but the project located elsewhere and never benefitted from the award.[145] Given the quantities of electricity that data centers require to operate, incentives such as those New York offers are very meaningful. Some reports have indicated that the value of the electricity incentives Verizon would have received exceeds $96 million over the fifteen years during which the company would have received the benefit.[146] Likewise for Yahoo!, its electricity incentives were estimated to be worth $58 million.[147]

State utility regulators have also approved applications submitted by large, privately owned utilities such as Duke Energy and Dominion Virginia Power to provide discounted electricity to certain economic development projects.[148] While these two utilities are by no means the only ones that provide such discounted electricity for economic development purposes, the details of their programs reflect some of the inconsistent policy approaches. In North Carolina, Duke Energy's provision of discounted electricity is discretionary, while in Virginia, Dominion's program is offered by-right to companies that meet the criteria set forth in a Commission-approved rider.[149] The criteria these two states' utility

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> investments in energy efficiency measures as a condition to receiving a recharge New York power allocation.

Id.

[144] Although these and other data centers benefitted from these incentive programs, they are by no means designed solely for data centers as manufacturers and other types of businesses have received many more awards. For a summary of approved ReCharge New York applications, see RECHARGE NEW YORK APPLICANTS, N.Y. POWER AUTH. (Sept. 2012), http://www.nypa.gov/RechargeNY/Alpha%20-Summary%20of%20%20RNY%20Application%20List%20through%2010-01-2012%20-%20Final.pdf.

[145] Some opined that Verizon's decision to not locate in Somerset was based at least in part on negative attention generated by a lawsuit that claimed local government officials improperly allowed the project to proceed without an environmental impact study. *See In re* Rizzo, 929 N.Y.S.2d 202, *4 (Sup. Ct. 2011); Joyce Miles, *Verizon Spikes Somerset Center*, TONAWANDA NEWS, Mar. 17, 2011, http://tonawanda-news.com/local/x449496350/Verizon-spikes-Somerset-center.

[146] Heaney, *supra* note 9.

[147] *Id.*

[148] *In re* Duke Energy Corp., 2004 WL 3220220 (N.C.U.C. 2004); *Application of Virginia Elec. & Power Co.*, 2013 WL 3216099 (Va.S.C.C. 2013).

[149] *Application of Virginia Elec. & Power Co.*, 2013 WL 3212523, at *2 (Va.S.C.C. 2013).

regulators have established vary widely. In Virginia, Dominion's economic development rates are available to nonretail sector customers that increase their employment by 0.07 full-time jobs or create $2,000 of capital investment per kW of incremental load.[150] In North Carolina, Duke may provide its economic development rates to nonretail sector customers that increase their workforce by at least seventy-five full-time jobs and create at least $400,000 of new capital investments per 1,000 kW of new load.[151] While the modest effort to ensure that these rates are available to basic sector businesses is a step in the right direction, this qualification is not sufficiently detailed. Further, although some have voiced concerns regarding discriminatory awards when utilities may offer these discounted rates at their discretion, adequate oversight and accountability can police such misconduct while giving the utility an ability to collaborate with state economic development officials.[152]

Providing favorable electricity rates to only certain customers sometimes means that other ratepayers will subsidize the preferential rates, possibly leading to resentment in the regional economy.[153] Some have also argued that providing discounted electricity to certain industrial users skews business investment decisions and subsidizes inefficient energy usage.[154]

To address this, some states that provide such programs require their utility regulators to examine the effect any preferential rates will have on existing ratepayers.[155] Virginia's statute and implementing guidelines that allow its utility regulator to approve applications to provide preferential electricity rates requires the regulator to determine the

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[150] Letter from Horace P. Payne, Senior Counsel, Dominion Virginia Power, to Mr. Joel H. Peck, Clerk, Virginia Corporation Commission (June 26, 2013), *available at* http://docket.scc.virginia.gov/ (search cases for "PUE-2013-00027").

[151] Rider Pursuant to Order Granting General Rate Increase to Duke Energy Carolinas, N.C.U.C. Docket No. E-7, Sub. 1026 (N.C.U.C. 2013), *available at* http://www.duke-energy.com/pdfs/NCRiderEC.PDF.

[152] *Application of Virginia Elec. & Power Co.*, 2013 WL 3212523, at *2 (Va.S.C.C. 2013).

[153] *See* Transcript of the Natural Resources Committee, 102d Leg., 4–6, 15 (Neb. Feb. 1, 2012) (indicating tension between the public utility's view that only excess electricity will be discounted for economic development purposes and the Sierra Club–Nebraska Chapter's view that citizens suffering hardship deserve more consideration); *Comments and Request for Hearing of The Committee for Fair Utility Rates*, Case No. PUE-2013-00027, at 6 (Va.S.C.C. 2013) (indicating the concerns of an interest group comprised of large industrial electricity users regarding the allocation of the costs of discounted electricity provided pursuant to an economic development program).

[154] *In re Econ. Dev. Rates*, 1994 WL 746875, at *76 (N.C.U.C. 1994) (summarizing the Southern Environmental Law Center's concerns).

[155] *See* DEL. CODE ANN. TIT. 26, § 303 (West 2014); VA. CODE ANN. § 56-235.2(B) (West 2013).

effect any preferential rates will have on existing ratepayers.[156] The implementing guidelines provide that the utility applying for permission to provide a preferential rate must "[d]escribe in detail the rate impact of the proposal on the company's other customers and explain how [it] will ensure that other customers will be protected from bearing any increased rates as a result of the proposed special rate . . . ."[157] Other states' codes provide similar standards of evaluation: Delaware, for example, requires its energy regulator to find, prior to approving an application to provide a preferential rate, that the rate will "provide recovery of at least the incremental cost (including capital cost) of providing the relevant utility services . . . ."[158]

Most recently, the Nebraska Legislature approved legislation in March of 2012 that allows its public power districts:

> to negotiate [electric] rates for certain [economic development projects] . . . . This bill would enable eligible businesses to count on a negotiated energy rate for up to five years without the risk of a general retail rate increase. After the five year time limit, the business would revert to paying the applicable standard rate.[159]

This legislation allows Nebraska's public utility to enter into agreements with certain economic development prospects to sell excess electricity at cost instead of selling it on the open market.[160] In some cases the utility may make a profit by doing this, but that reportedly is not always the case.[161] By limiting its public power districts to provide only excess electricity, Nebraska has at least partially addressed some of the concerns discussed above, including the possibility that offering such volumes of electricity may accelerate the need to develop new generation facilities.

B. Conclusion and Recommendations

Each of these states' statutory schemes ensures that the recipient of a preferential rate will pay at least the marginal cost of generating that electricity.[162] They do not, however, take into consideration the

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[156] VA. CODE ANN. § 56-235.2 (West 2013); 20 VA. ADMIN. CODE § 5-310-10 (West 2013).
[157] 20 VA. ADMIN. CODE § 5-310-10 (West 2013).
[158] DEL. CODE ANN. TIT. 26, § 303 (West 2014).
[159] L.B. 1043, 102d Leg., 2d Sess. (Neb. Feb. 1, 2012), *available at* http://nebraskalegislature.gov/bills/view_bill.php?DocumentID=21350.
[160] *Id.*
[161] *See* Heaney, *supra* note 9.
[162] In Virginia, the analysis "start[s] with a determination of whether the revenues from the special rate would exceed the utility's variable costs of providing the service, [because]

environmental impacts that providing these rates may have, including the extent to which the award of any preferential rates will have on the need to expand baseload capacity or the development of alternative or renewable sources of electricity.[163] Although some states take the extent of a business's adoption of energy efficiency measures into consideration before providing discounted electricity to it, these criteria are not always laid out with sufficient specificity.[164] Further, it is counterintuitive to offer discounted electricity to a large user, thereby diminishing a natural disincentive for such consumption.[165] Last, only some of the statutes authorizing the approval of these preferential rates require a connection to economic development metrics, the creation of a certain number of new jobs or capital investments, for example.

To address the concerns raised in this section, states should limit their programs or authority to provide discounted electricity to data centers in a few ways. In order to be eligible to receive these rates, states should first require data centers to adopt demand-management methods in order to reduce their peak demand.[166] Second, states should adopt specifically enumerated efficiency and conservation criteria to evaluate a given data center's efforts.

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revenues in excess of variable costs would contribute to the recovery of fixed costs." Ex parte Promulgation of Guidelines for Special Rates, 1998 WL 244011 (Va.S.C.C. 1998).

[163] In fairness to the legislatures who have adopted these statutes, the regulators who implement them, and the utilities that use them, it is impractical to consider the effect that one award of discounted electricity would have on these criteria. These actors could consider, however, looking at awards in aggregate over a certain time horizon to determine an aggregate effect. With respect to the effects these preferential rates could have on the development of renewable sources of electricity, the author intends to refer to the extent to which utilities may need to divert capital to expand generation via traditional energy sources for baseload generation, which are typically powered by coal, nuclear, and hydroelectric sources. Jennifer E. Gardner & Ronald L. Lehr, *Wind Energy in the West: Transmission, Operations, and Market Reforms*, NAT. RESOURCES & ENV'T 13 (Winter 2012).

[164] *See, e.g.*, Recharge New York Power Program, N.Y. ECON. DEV. LAW § 188-a (McKinney 2013).

[165] This discussion is not intended to indicate that a temporary price cut will cause data centers to use electricity carelessly. However, EPA noted that data center operators' concern with "energy use is often motivated by electricity supply, cooling, and building space constraints than by electricity costs." ENERGY STAR REPORT, *supra* note 3, at 86. Regardless of the motivation, providing a scarce resource at a reduced price is illogical if the goal is to encourage reduced consumption. Further, when it comes to utilities' efforts to reduce their customers' consumption through demand side management strategies, they "are not always eager to implement DSM programs, which reduce utility revenues and profits under most states' ratemaking formulas." *Id.* at 95.

[166] *See* GHATIKAR, *supra* note 140, at iii.

While New York's statute is certainly a step in the right direction, it should go further by enumerating the types of required activities and require recipients to adopt more specific conservation, demand-management, and efficiency measures as opposed to making aspirational goals.[167] Last, in addition to this "carrot" approach, states should consider using a complementary "stick." Data centers that receive these preferential rates should face a degree of risk for not effectively implementing the conservation, efficiency, and demand-management measures to which they commit. Just as economic developers use claw-backs to recoup certain incentives from companies that fail to meet their job creation or capital investment requirements,[168] power providers should be required to recoup some proportion of the value of the discounted energy provided to data centers when they fail to meet their energy-related goals. By adopting these measures, ordinary ratepayers will have more confidence in the provision of these rates, data centers will be more strongly encouraged to mitigate their energy consumption, and scarce energy resources will be better protected and conserved.

V. DATA CENTERS' ROLE IN STATE ECONOMIES

> A rule of economics is that for manufacturing and mature businesses, eventually the price of the good goes to the marginal cost of its production and distribution. Well, in the digital world, for digital goods, the marginal cost of distribution and manufacture is effectively zero or near zero.[169]

As discussed in Part I, state economic development entities have typically focused their efforts on building their economic bases, seeking businesses that export their goods and services from the state, thereby bringing in outside dollars and growing the state's economy. In light of this, it appears contradictory that many state governments focus significant resources, including economic development staff and incentives, recruiting data centers that provide free services. Indeed "much of the

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[167] For example, New York's statute pertaining to the evaluation of an applicant's efficiency measures notes that one consideration is whether the applicant "will agree to participate in or perform energy audits of its facilities," but it is silent on any commitment to implement the findings of such energy audits or consequences from failing to do so. N.Y. ECON. DEV. LAW § 188-a(c)(ix) (McKinney 2011).

[168] JLARC REPORT, *supra* note 29, at 38.

[169] James Manyika, *Google's View on the Future of Business: An Interview with CEO Eric Schmidt*, MCKINSEY Q. (Nov. 2008), *available at* http://www.timewarner.com/sites/timewarner.com/files/ckeditor/public/files/googleviewonthefutureSchmidt_2008.pdf.

economic activity on the Net involves value but no money."[170] Instead, most companies that provide free internet-based services generate revenue by selling advertising space that is displayed to those free users.[171] Thus, in order to generate revenue, these companies must develop free services that become popular enough for a third party to find value in advertising through them to their users. The value that these companies add to the economy is not through their data centers, but instead through the software products that they develop. Nonetheless, state governments have aggressively recruited the facilities that allow these companies to provide these free services to their consumers.[172]

The free (or very cheap) applications that many large enterprise data centers operate (entertainment services such as YouTube or digital music stores such as iTunes) are about as retail-equivalent as they come. Ironically, state governments would never subsidize a movie theater or a record store, yet they treat their digital equivalents—namely, certain enterprise data centers—much differently and offer them generous incentive packages. Cloud and colocation data centers provide more tangible value to existing businesses in a given region, but they, too, are providing a retail service (albeit at least one that enables greater productivity in the regional economy). These data centers are the equivalent of administrative service companies that service a company's computers or provide telecommunications services. While they certainly may add value for their customers by promoting efficiency and reducing costs, they are not exporting their services out of state and bringing in new dollars. Just as with some of the retail services that some enterprise data centers power, state governments typically would not have a role recruiting the brick-and-mortar equivalents of cloud and colocation data centers because they are not part of the economic base.

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[170] Rishab Aiyer Ghosh, *Cooking Pot Markets: An Economic Model for the Trade in Free Goods and Services on the Internet*, 3 FIRST MONDAY No. 3-2 (Mar. 1998), http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/580/501.

[171] GOOGLE INC., ANNUAL REPORT FORM 10-K 33 (Dec. 31, 2012) (noting Google earned approximately seventy-one percent of its revenue from advertising associated with its websites).

[172] Major Data Center, *supra* note 127 (announcing Microsoft's decision to locate a $500 million data center in Mecklenburg, Virginia and the Commonwealth's award of $6.9 million of cash grants); Press Release, Office of Governor Patterson, Governor Paterson Announces Yahoo! Data Center Now Open in Western New York (Sept. 20, 2010), *available at* http://www.governor.ny.gov/archive/paterson/press/092010DataCenter.html (announcing the opening of a $150 million Yahoo! data center in Lockport, New York and the provision of "various" incentives, including fifteen megawatts of subsidized electricity and a payment in lieu of taxes arrangement among others).

This presents a catch-22 scenario for state governments: although large enterprise data centers may bring the most alleged prestige to a community, they tend to provide free services to their users and they would not be a part of a state's economic base under traditional analysis. Further, particularly given that these data centers typically do not require any proximity to their customers (and some companies in fact prefer to disperse their data centers across the country for reliability purposes), it is difficult to find the value that data centers add to the state beyond the modest direct tax benefits they bring.

When assessing these tax benefits, although data center employees tend to be well paid, these facilities typically do not employ a large number of people.[173] Nor do many of these facilities, in contrast to a manufacturing facility that exports its products to other states, actually sell any products. Because of these characteristics, most data centers bring relatively modest new tax revenues to a state's economy when compared to other types of facilities that either (or both) have a larger workforce and make taxable sales.[174] For example, the $1.2 billion project Nebraska sought to recruit in 2012 was expected to bring only $9.4 million of net new revenue to that state over fourteen years.[175]

CONCLUSION AND RECOMMENDATIONS

Most economic development incentives and preferential electricity rates many states make available to data centers on a by-right basis conflict with sound economic development and energy policies. States' traditional, basic sector limitation on the types of businesses they seek to recruit cannot justify the economic development incentives many offer to recruit data centers. This is particularly apparent when these incentives are offered on a statewide basis. Likewise, the preferential electricity rates utilities in certain states are authorized to offer to data centers conflict with states' continued efforts to address the affordability and availability of electricity. Given that these preferential rate programs are intended

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[173] Gerena, *supra* note 1, at 30.

[174] "[P]rojects with certain characteristics, such as creating additional jobs in the community and selling the majority of their output to customers in other states, are likely to have greater effects on the State's economy than projects without these characteristics." JLARC REPORT, *supra* note 29, at vii. This quote does not refer to a direct comparison of data centers to other projects, but refers instead to the types of projects that are more likely to bring net new revenues to a state.

[175] NEB. LEGIS. FISCAL OFFICE, 2012 L.B. 1118 FISCAL NOTE (Feb. 24, 2012), *available at* http://nebraskalegislature.gov/bills/view_bill.php?DocumentID=16082 (last visited Mar. 13, 2014).

to further states' economic development goals, these programs could better meet these goals if they mirrored the improved economic development policies this Note recommends.

Despite this Note's argument that many data centers are not part of the basic sector and do not merit public investment on an economic-base theory of economic development, there may be a mission-oriented justification for providing incentives and preferential electricity rates on a more limited basis. While the economic base principle is at the foundation of economic development entities' strategies, their missions to improve the quality of life, expand access to employment opportunities, and increase tax revenues must be borne in mind.[176] Because of the particularly dire situations facing some distressed, rural communities that are still searching for recovery from significant manufacturing losses, it would be appropriate for states to offer incentives to certain data centers that locate in such regions. Much like the farmshoring initiatives some states undertook in the late 1990s and 2000s, a strategy to recruit to these regions data centers—whose proximity to customers is less important—could be justified as furthering state-level, economic development entities' social policy missions.

To the extent the proximity to its customers is an important consideration for a given data center, states should be particularly cautious to assess whether the data center is motivated to locate in a given area absent any incentives. That is, if a given data center is serving customers in the region where it is located, then it is more apparent that it is providing retail-equivalent, non-basic sector business support services.

Although the recruitment of non-basic sector businesses to a distressed region still conflicts with economic development entities' traditional focus, recruitment to certain distressed regions still serves important social policy goals. Just as sometimes occurred with farmshoring initiatives, such a recruitment strategy may result in the mere relocation of certain business activity from an affluent part of the state to a less affluent one, resulting in no net economic growth. Nonetheless, closing the gaps between affluent and distressed regions is in states' interests and furthers their economic development missions. By realigning their economic development incentives and authority to provide preferential electricity rates to data centers, states should be proud that they are working to bring high technology businesses to their rural, distressed communities and closing severe disparities in wealth and opportunity that exist within their borders.

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[176] *See supra* Part I.A.