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SUSTAINABLE COMMERCE: PUBLIC HEALTH LAW AND ENVIRONMENTAL LAW PROVIDE TOOLS FOR INDUSTRY AND GOVERNMENT TO CONSTRUCT GLOBALLY-COMPETITIVE GREEN ECONOMIES

T. Rick Irvin, PhD, JD* and Peter A. Appel, JD**

I. INTRODUCTION

States and local governments have long employed traditional statutory and regulatory law to proactively manage public health problems—from food safety to product labeling—vital to the economic success of the U.S. within the global marketplace. And while the relationship between public health and environmental problems are well-understood, public health issues have not figured prominently as the stated rationale for governmental and industry involvement in creating responses to impending environmental threats. Likewise, the constitutional authority with regard to police power further provides local and state governments with the legal bases to create regulatory incentives to address new, emerging environmental problems.

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** Associate Professor, UGA School of Law. B.A., J.D. Yale University. This Article is based in part on a presentation made at the SIU School of Law on February 27, 2009. Many thanks to the organizers of the conference—faculty, staff, and students—for all of their hard work. In addition, the authors have several people and entities to thank. The representatives to the UGA Law School for Westlaw (Sue Moore) and Lexis (Mark S. Thompson) have provided excellent and ongoing research support for this project and others. The UGA School of Law's faculty development fund provided financial support for some of the work on this Article. J. Olney Meadows and Mike Helton of the Catoosa County government and Chad Young, the county attorney, were very generous with their time as we originally learned about the Catoosa County plan to sell carbon credits; Mr. Meadows has provided ongoing information about that program as it has matured. Parts of this Article were produced as in conjunction with: (1) the UGA Environmental Practicum—a joint course program between the UGA School of Law, the UGA River Basin Center, and the UGA Odum School of Ecology; (2) the UGA School of Law's Land Use Clinic and; (3) the UGA School of Law's Public Health Law course (Professor Fazal Khan, M.D.). Finally, Matthew Bowers, UGA School of Law class of 2010, provided invaluable assistance in the original presentation of this Article at the SIU School of Law.

In our previous work,¹ we identified the need for industry and government to better utilize existing public health and environmental law to create market-based, regulatory incentives that promote sustainable commerce initiatives, and in doing so, position the U.S. local and state economy to aggressively compete against global competitors in global markets. By sustainable commerce, we refer to products and practices that minimize environmental impacts and optimize commercial value while realizing both public and private environmental benchmarks.² State and local governments as well as industry are crafting sustainable commerce initiatives to take advantage of the competitiveness implications derived from the ongoing structural shifts in natural resource, energy, and legacy waste costs associated with US goods and services.³ States like California and New Jersey, major cities like Seattle, Washington—and even small towns like Greenburg, Kansas and Ringgold, Georgia—have formulated sustainable commerce initiatives tailored to control increases in resource costs while maximizing the opportunities for increased state and local revenues, job growth, and industrial development these structural shifts are expected to achieve.⁴

In the U.S., sustainable commerce initiatives include a diverse array of governmental and business practices adopted beginning in the 1990s to minimize pollutant emissions (including carbon and other greenhouse gases (GHGs)).⁵ Taken together, these practices have prompted government and industrial transition to renewable energy while promoting new consumer product designs that recycle or reuse constituent natural resources while minimizing manufacturing waste generation.⁶ Sustainable commerce initiatives have matured within the economies of industrialized countries to become integral components of the corporate and governmental programs that will drive transportation, manufacturing, energy, and business development policy throughout the 21st century.⁷

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1. See Peter A. Appel & T. Rick Irvin, *Changing Intellectual Property and Corporate Legal Structures to Promote the U.S. Environmental Management and Technology Systems Industry*, 35 B.C. ENVTL. AFF. L. REV. 397 (2008).
 2. T. Rick Irvin et al., *Kyoto Comes to Georgia: How International Environmental Initiatives Foster Sustainable Commerce in Small Town America*, 36 GA. J. INT'L & COMP. L. 559, 562 (2008).
 3. See generally DANIEL C. ESTY & ANDREW S. WINSTON, GREEN TO GOLD: HOW SMART COMPANIES USE ENVIRONMENTAL STRATEGY TO INNOVATE, CREATE VALUE, AND BUILD COMPETITIVE ADVANTAGE 7-18 (2006).
 4. *Id.*
 5. See Appel & Irvin, *supra* note 1, at 398.
 6. *Id.* See also ESTY & WINSTON, *supra* note 3, at 7–10.
 7. See ESTY & WINSTON, *supra* note 3, at 10–18.

Table 1
Sustainable Commerce: Evolution of US Industry and Government
from Traditional Goods/Services to Sustainable Commerce-Driven
Goods and Services.⁸

Construction/Civil Engineering	Waste site management, remediation	Renovation/redesign of existing industrial facilities
Process/Chemical/Mechanical Engineering	Waste stream generation, management, control, disposal; recycling services	Design/operation of low carbon technology equivalents for existing industrial manufacturing/process equipment
Mechanical/Design/Manufacturing Engineering	air/water handling systems; packaging and production design	Life-cycle analysis for product design/development/production
Engineering Management/Consulting Services	Process design, permitting, regulatory activities	Management of carbon offset/raw material programs; smart growth planning/implementation

Source: 35 B.C. ENVTL. AFF. L. REV. AT 399.

Table 1 summarizes just how fundamental these changes will be to the size, scope, and structure of state and national industry, government, and business in the years to come. Traditionally, corporations as well as federal and state governments manage much of their environmental programs based on the statute-by-statute requirements of federal environmental regulations. These requirements include wastewater treatment, air emissions management, hazardous-waste collection, and waste-site management.

In the new sustainable commerce economy however, industry, government, and business will be driven by a number of factors to provide goods and services while minimizing environmental impacts (e.g. carbon emissions) associated not only with industrial operations but also with the entire lifecycle of the goods and services they provide to global markets.⁹ Regulatory requirements and customer demands that oblige manufacturers to upgrade their facilities with low-carbon replacement technology will require not only the design and operation of low-carbon technology equivalents for existing industrial manufacturing and processing equipment, but also new advances in the renovation and redesign of existing industrial facilities in a cost-effective manner. Manufacturing, mechanical, and design engineers will

8. Peter A. Appel & T. Rick Irvin, *supra* note 1 at 399.

9. See, e.g., GARY A. DAVIS ET AL., EXTENDED PRODUCT RESPONSIBILITY: A NEW PRINCIPLE FOR PRODUCT-ORIENTED POLLUTION PREVENTION 3-22 to 3-23 (1997), available at <http://eerc.ra.utk.edu/clean/pdfs/epm1-4.pdf>.

be required to conduct life cycle analyses (LCAs) as part of product designs that consider alternatives for raw materials needs, energy requirements, maintenance, disposal, and product recyclability before actual manufacturing begins.¹⁰ Engineering and corporate managers will totally rethink facility site selection, design, construction, operation, and maintenance, as well as the means by which workers, raw materials, and finished products move to and from their facilities.

A key challenge, then, is for local and state governments to work coordinately with industry—whether through existing regulatory agencies or with new public-private partnerships—to encourage sustainable commerce initiatives.¹¹ Public health risks associated with global climate change provide a legal nexus for such local/state government cooperation with business and industry on sustainable commerce development, but such action can take many forms—from actual participation in sustainable commerce to creating structures and incentive for private entities to take action on their own.¹² In addition, legacy public health and environmental risks—from inactive/abandoned landfills to inadequate water systems—also provide additional drivers for industry and government to harness the economic growth opportunities from sustainable commerce initiatives and create new legal authority with new revenue streams where legacy public health and environmental risks can be managed while ensuring such future risks are not manifest.

In this Article, we outline a new private/public governance paradigm whereby industry and government create sustainable commerce initiatives which coordinately improve local/state economies and increase employment, enhance local/state competitiveness in the global marketplace, and at the same time substantially improve local/state public health and environmental infrastructure. Since the 1970s, U.S. environmental protection programs have started with comprehensive congressional legislation providing authority to the various federal agencies to implement and design regulatory programs that meet overarching national and international environmental objectives.¹³ Some

10. *Id.*

11. See Barry G. Rabe et al., *State Competition as a Source Driving Climate Change Mitigation*, 14 N.Y.U. ENVTL. L.J. 1, 28–9 (2005).

12. See Steven R. Schiller, *Implications of Defining and Achieving California's 80% Greenhouse Gas Reduction Goal*, available at http://www.climatechange.ca.gov/events/2007_conference/presentations/2007-09-13/2007-09-13_SCHILLER_STEVEN.PDF (last visited Mar. 8, 2009); see also Tom Kerr, *Effective Strategies for Climate Risk Mitigation*, available at http://www.climatechange.ca.gov/events/2005-02-23_enbanc_cpuc/presentations/2005-02-23_EN-BANC_PANEL3_KERR_USEPA.PPT (last visited Mar. 8, 2009).

13. See Clean Water Act, 33 U.S.C. §§ 1251–1387 (2006); Resource Conservation and Recovery Act of 1976, 42 U.S.C. §§ 6901–6992k (2006); Clean Air Act, 42 U.S.C. §§ 7401–7671q (2006). For a history of the development of federal environmental law, see RICHARD J. LAZARUS, *THE MAKING OF*

of these programs are very top-down. For example, the U.S. was a major proponent, and later signatory, of the 1989 Montreal Protocol which protected the earth's ozone layer by phasing out production of select halogenated hydrocarbons shown to contribute to ozone depletion; state, federal, and municipal initiatives subsequent to adoption of the Montreal Protocol virtually eliminated U.S. consumption of specified ozone-depleting agents covered by the agreement by the late 1990s.¹⁴ For more domestic concerns, federal environmental legislation since the 1970s has invited state governments to participate to create plans that effect federally-designed objectives.¹⁵ The improvements from these programs can prove significant from an environmental and public health perspective at least from those nationally defined benchmarks.

By comparison, U.S. sustainable commerce initiatives to regulate GHG emissions by industry, government, and the general population have not followed federal adoption of the 1997 Kyoto Protocol¹⁶ the major existing international agreement adopted to move the world's developed economies from a high-carbon technology base to a low-carbon technology base.¹⁷ Effective in 2005, the Kyoto Protocol crafted under the elements of the 1992 U.N. Framework Convention on Climate Change¹⁸ aims to reduce fossil fuel consumption, natural resource depletion, greenhouse gas emissions, and the public health impacts of continued increases in carbon fuel consumption within both industrialized and developing economies¹⁹ The Kyoto Protocol, which required each signatory to monitor and reduce greenhouse gas emissions to protocol-specified levels, has been ratified by over 170 countries and governmental parties to date.²⁰ The U.S. however, is not at present a signatory to this agreement and has not ratified federal legislation incorporating Kyoto Protocol goals and objectives.²¹

At the same time, U.S. reaction to Kyoto and its offshoots has not been nugatory. Indeed, major U.S. sustainable commerce initiatives have been

ENVIRONMENTAL LAW 43-165 (2004).

14. *Lazarus*, *supra* note 13 at 9-19.

15. See Peter A. Appel, *Federalism in Environmental Protection*, 23 JUST. SYS. J. 25, 27 (2002).

16. Kyoto Protocol to the United Nations Framework Convention on Climate Change, Dec. 10, 1997, 37 I.L.M. 32 (1997) [hereinafter Kyoto Protocol].

17. See Cass R. Sunstein, *Of Montreal and Kyoto: A Tale of Two Protocols*, 31 HARV. ENVTL. L. REV. 1, 23-29 (2007)

18. United Nations Framework Convention on Climate Change, May 9, 1992, S. Treaty Doc. No. 102-38, 1771 U.N.T.S. 107 [hereinafter UNFCCC].

19. Kyoto Protocol, *supra* note 16, art. 3.

20. See UNFCCC *Kyoto Protocol: Status of Ratification*, http://unfccc.int/kyoto_protocol/status_of_ratification/items/2613.php (last visited Mar. 19, 2009) (follow link under Latest Count).

21. *Id.*

undertaken, not by the federal government, but by state and local governments or by industrial organizations and business groups.²² This Article posits that state and local industry and government have taken note of the economic development opportunities and competitiveness implications of sustainable commerce initiatives along with the impacts of these initiatives on legacy—as well as future—environmental and public health needs.²³ In response, local/state industry and government are creating sustainable commerce initiatives of their own in response to the structural shifts in energy and natural resource use within emissions-intensive industrial, as well as governmental, operations.²⁴ Sustainable commerce initiatives also serve the national purposes of coordinately reducing U.S. reliance on foreign energy sources, creating or enhancing markets for U.S. goods, reducing the impacts of US industrial operations, and accelerating the conversion of U.S. public and private entities from high-carbon to low-carbon technology and practices.²⁵

U.S. industry and government are being driven by necessity to undertake sustainable commerce initiatives in part because corporations with global business in the U.S., which account for significant portions of the global economy, have adopted and implemented Kyoto-mandated metrics on their own.²⁶ Businesses in the EU and other Kyoto-compliant regions, which have already implemented sustainable commerce initiatives, now require overseas vendors and suppliers to implement their own sustainable commerce initiatives as a condition of approved supplier status. For example, new EU regulations, developed in part to meet Kyoto-specified emissions targets, now prevent many U.S. goods from being imported into EU countries because their manufacturers have not adopted similar Kyoto- and EU-environmental

22. ESTY & WINSTON, *supra* note 3, at 72.

23. *See generally* Irvin, et al., *supra* note 2.

24. For information on California's Climate Change Initiatives, see, California Climate Change Portal, <http://www.climatechange.ca.gov/> (last visited Mar. 19, 2009). For information on New Jersey's Global Warming Initiatives, see State of New Jersey: Global Warming, <http://www.state.nj.us/globalwarming/index.shtml> (last visited Mar. 19, 2009). For information on Seattle, Washington's Global Warming Initiative, see, <http://dnr.metrokc.gov/dnrp/climate-change/conference-2005.htm> (last visited Mar. 19, 2009). For information on Albuquerque, New Mexico's Climate Change Initiatives, see Albuquerque: Stop Global Warming, <http://www.cabq.gov/sustainability/green-goals/global-warming/stop-global-warming> (last visited Mar. 19, 2009). For information on small and medium-sized business, see Esty & Winston, *supra* note 3, at 72. For information on Catoosa County, Georgia's climate change initiatives, see Randall Franks, *County Set to Cash in Carbon Credits*, Catoosa County News, June 19, 2007, available at http://news.mywebpal.com/news_tool_v2.cfm?pnpid=724&show=archivedetails&ArchiveID=1282629&om=1.

25. ESTY & WINSTON, *supra* note 3, at 72.

26. *Id.*

guidelines.²⁷ State and local governments recruiting overseas business investments now find sustainable commerce requirements among the site selection criteria considered by domestic and foreign firms.²⁸ U.S. and international financial organizations, including multi-national insurance firms and venture capital funds, now include sustainable commerce objectives and targets within their evaluation guidelines for selecting U.S. regions in which to assign investment dollars.²⁹

This Article examines the legal mechanics underlying the sustainable commerce private/public governance paradigm whereby industry and government create sustainable commerce initiatives which coordinately grow local/state economies and employment, enhance local/state competitiveness in the global marketplace, and at the same time substantially improve local/state public health and environmental infrastructure. This includes an examination of the legal foundation for state/local sustainable commerce initiatives drawn from existing public health and environmental law and a review of two specific local/state sustainable commerce initiatives which have followed this paradigm with impressive results over a two-to-four year timeframe. Part II of this Article examines how public health and environmental law bases provide legal authority and policy rationales upon which to construct local/state sustainable commerce initiatives. Part III examines how a small Georgia town, Ringgold—the county seat for Catoosa County, GA—recently implemented sustainable commerce initiatives, allowing this North Georgia community to actively participate in market-based low-carbon sustainable commerce initiatives which not only address legacy environmental and public health issues, but which create economic opportunities into the future. Part IV outlines how global industry now fulfills its own sustainable commerce programs requiring U.S. manufacturers to meet detailed environmental and public health metrics for both corporate operations and product life cycle analysis as a condition of purchasing their goods and services. Part IV also details how one U.S. manufacturer, the Murray Corporation, created management systems based on the ISO standard series to address customer environmental and public health metrics for their operations and products in order to qualify as an approved vendor for sales overseas. Part V then concludes with a continued discussion of ISO standard-based management systems as a key legal and regulatory tool by which local government and industry can coordinately construct sustainable commerce initiatives which

27. *Id.* at 1–2 (explaining how EU blocked import of Sony PlayStations because of cadmium content).

28. Warren Karlenzig, *Top US Cities for Cleantech Incubation Clusters*, <http://www.sustainlane.us/articles/cleantech.jsp> (last visited Mar. 19, 2009).

29. ESTY & WINSTON, *supra* note 3, at 90–97.

ensure government and industry will successfully attain defined sustainable commerce goals. The example is drawn from the experience of the U.S. public health system. This discussion includes a review of how ISO-based third party assurance systems complement existing common and statutory law to achieve aggressive sustainable commerce timelines and goals over the immediate future (2–4 year timeframe).

II. LEGAL AND POLICY RATIONALE FOR SUSTAINABLE COMMERCE INITIATIVES DERIVED FROM PUBLIC HEALTH LAW AND ENVIRONMENTAL LAW

Local and state leadership regarding U.S. public health and environmental issues has been a common undercurrent in the evolution of both public health and environmental law over the past two hundred years.³⁰ Concern for public health has provided a traditional justification for governmental regulatory involvement at the state and local level. Public health regulations extend beyond obvious measures such as quarantines to the original land-use regulations, which New York and San Francisco enacted to promote public health.³¹ Although public health rationales often provide a basis for expanded federal legislation over the same topics,³² state and local governments do not lose their authority over these issues unless the federal government preempts their involvement. City, county, and state initiatives have thus evolved to address public health and environmental issues which overlap local, state and national boundaries, even when trans-boundary effects are not the primarily goal of the regulation. Local and state public health and environmental programs have been created, for example, where the federal government, traditionally having significant—and sometimes exclusive—jurisdiction over these areas of law, has not tasked regulatory agencies to address specific trans-boundary public health and environmental issues.³³ Many local and state governments continue to respond to the call for climate change initiatives by crafting programs for both government and industry to control GHG emissions, reduce energy consumption, and enhance the reuse and recycling of natural resources. At the same time, an ever-growing number of industrial initiatives have supplemented local and state government initiatives to pro-actively control facility emissions and reduce resource

30. See Alexandra B. Klass, *Common Law and Federalism in the Age of the Regulatory State*, 92 IOWA L. REV. 545, 567 (2007).

31. Comments of Lisa Feldstein, Southern Illinois University School of Law Symposium (2009).

32. For federal legislation, *see supra* note 13.

33. *See generally* sources cited *supra* note 24.

consumption; combined industrial-local government program success in addressing sustainable commerce initiatives continues to be chronicled in the legal and policy literature.³⁴

Most sustainable commerce initiatives undertaken by local as well as federal government agencies to date targeting both public health and environmental objectives have focused on cost-effective implementation of existing energy technologies—including wind, solar, and wave power. These initiatives seek immediate improvement in U.S. energy efficiency while reducing climate change-related emissions in order to create fertile markets for new sustainable commerce technologies under development.³⁵ Breakthrough sustainable commerce initiatives to date include policies to promote significant research, development and deployment of energy-efficient commercial, industrial, and consumer technologies with particular attention on available carbon capture and storage technology—an area of development of particular importance for any future programs in clean coal technology development.³⁶

These successful sustainable commerce initiatives, focused on a transition to a low-carbon technology-based economy, have taken two forms. The first form includes mandatory approaches to reduce pollution emitted from a variety of sources such as large stationary sources and transportation, and to reduce energy use in commercial and residential buildings. These mandatory reductions and goals tend to be phased in over time with a short and long-term timeframe.³⁷ The second form of these initiatives focuses on flexible approaches to establish a price signal for emissions and natural resource utilization that may vary by economic sector. Such initiatives include market-based incentives, performance standards, cap-and-trade programs, and tax incentives to engender targeted technology research, development, and deployment programs.³⁸

Any system of public health and environmental regulation in the U.S. must of course fit within the constitutional structure of the U.S. The U.S. Constitution creates overlapping responsibilities balanced between the individual states and the federal government by which states can function as experimental laboratories and proving grounds to test the efficacy of proposed

34. *Id.* See also Kirsten H. Engel, *Harmonizing Regulatory and Litigation Approaches to Climate Change Mitigation: Incorporating Tradable Emissions Offsets into Common Law Remedies*, 155 U. PA. L. REV. 1563, 1579–93 (2007).

35. See generally sources cited *supra* note 24.

36. For information on U.S. federal carbon sequestration programs, see National Energy Technology Laboratory Technologies: Carbon Sequestration, http://www.netl.doe.gov/technologies/carbon_seq/index.html (last visited Mar. 8, 2009).

37. U.S. Climate Action Partnership, *supra* note 3, at 86.

38. See Appel & Irvin, *supra* note 1.

regulatory and policy initiatives.³⁹ With this set of overlapping responsibilities, the federal government has the primary responsibility for international and interstate relations, especially where manufacturing and commerce are involved;⁴⁰ states enjoy primary authority over local matters such as public welfare, public health, and child custody.⁴¹ While the constitutionally-defined domains of the federal versus the state government often overlap, the Constitution does prevent many conflicts from occurring by prohibiting some actions by the states⁴² and makes general provision for all other conflicts in the Supremacy Clause.⁴³

The primary area of overlap between the federal government and the states is in the regulation of commercial activities. As interpreted by the Supreme Court, the states have leeway to govern economic activities unless the federal government takes charge of the area through preemptive legislation.⁴⁴ Some areas of commerce are so intertwined with interstate or foreign relations that, by virtue of the so-called Dormant or Negative Commerce Clause, the states are precluded from acting without express congressional consent.⁴⁵ By and large, however, the constitutional limitations focus on the exact strategies that states employ to achieve their ends rather than those ends themselves.⁴⁶ Provided that a state can prove a nexus between the end to be regulated and the health, welfare, economy, or morals of the state, Supreme Court precedent usually provides the state some means of

39. See *New State Ice Co. v. Liebmann*, 285 U.S. 262, 311 (1932) (Brandeis, J., dissenting). *New State Ice* involved a licensing scheme for ice manufacturers, which the majority held to be unconstitutional. *Id.* at 278–80.

40. See U.S. CONST. art. I, § 8, cl. 3 (granting Congress the authority “[t]o regulate Commerce with foreign Nations, and among the several States . . .”).

41. See, e.g., *United States v. Morrison*, 529 U.S. 598, 616 (2000); *United States v. Lopez*, 514 U.S. 549, 564 (1995). The Court has also suggested in dicta that land use regulation falls within this area of presumptive state governance. See *Rapanos v. United States*, 547 U.S. 715, 738 (2006) (plurality opinion) (“Regulation of land use, as through the issuance of the development permits sought by petitioners in both of these cases, is a quintessential state and local power.”); *Solid Waste Agency of N. Cook County v. U.S. Army Corps of Eng’rs*, 531 U.S. 159, 174 (2001).

42. See, e.g., U.S. CONST. art. 1, § 10, cls. 1–3.

43. U.S. CONST. art. VI, § 2 (“This Constitution, and the Laws of the United States which shall be made in Pursuance thereof; and all Treaties made, or which shall be made, under the Authority of the United States, shall be the supreme Law of the Land; and the Judges in every State shall be bound thereby, any Thing in the Constitution or Laws of any State to the Contrary notwithstanding.”).

44. *Am. Ins. Ass’n v. Garamendi*, 539 U.S. 396, 413 (2003).

45. On the dormant foreign commerce clause, *Id.* (“There is, of course, no question that at some point an exercise of state power that touches on foreign relations must yield to the National Government’s policy, given the ‘concern for uniformity in this country’s dealings with foreign nations’ that animated the Constitution’s allocation of the foreign relations power to the National Government in the first place.” (quoting *Banco Nacional de Cuba v. Sabbatino*, 376 U.S. 398, 427 (1964)).

46. *Id.* at 419–20.

pursuing that goal absent express or implied federal interference or some other bar.⁴⁷ The federalism debate is thus often a political debate rather than an issue for judicial resolution because Congress can often answer the question of which government has authority to regulate a particular activity.

States have a considerable range of potential actions that they can undertake to address public health and environmental risks—especially if states are creative in how they approach a particular legal or regulatory problem. As an example of the seemingly disparate outcomes in this area, states generally cannot tax an out-of-state product to raise its price in comparison to locally produced goods; states can, however, subsidize local goods to lower their price in comparison to out-of-state goods.⁴⁸ Similarly, although states cannot conduct their own foreign policy, states can respond to overseas influences and realities in concocting state policy, which would appear to extend to making determinations about particular products for the state’s own use (unless such action is expressly barred by federal action).⁴⁹ These observations point out key legal and policy issues which must be addressed by state and local governments as they craft legislative initiatives to address geophysical, ecological, and climatic impacts of high carbon technology and energy systems in the absence of comprehensive and preemptive federal legislation.

Legal and policy analysts have begun to examine the nexus between sustainable commerce initiatives by state and local governments as compared to the proffered public health and environmental benefits in these same areas.⁵⁰

47. See *United Haulers Ass’n v. Oneida-Herkimer Solid Waste Mgmt. Auth.*, 550 U.S. 330, 342-43 (2007) (upholding ordinance requiring disposal of waste in government-owned facility); *Metro. Life Ins. Co. v. Massachusetts*, 471 U.S. 724, 756 (1985) (upholding insurance mandated for private employees); see also 1 LAURENCE H. TRIBE, *AMERICAN CONSTITUTIONAL LAW* 1100 (3d ed. 2000) (“State regulations seemingly aimed at furthering public health or safety, or at restraining fraudulent or otherwise unfair trade practices, are less likely to be perceived as ‘undue burdens on interstate commerce’ than are state regulations evidently seeking to maximize the profits of local businesses or the purchasing power of local consumers.”).

48. See Dan T. Coenen, *Business Subsidies and the Dormant Commerce Clause*, 107 *YALE L.J.* 965, 967-68 (1998). To see the narrow distinctions in the Court’s Commerce Clause jurisprudence directly affecting waste disposal, compare *United Haulers Ass’n v. Oneida-Herkimer Solid Waste Mgmt. Auth.*, 550 U.S. 330 (2007) (upholding flow control ordinance requiring disposal in publicly owned facility), with *C & A Carbone, Inc. v. Clarkstown*, 511 U.S. 383 (1994) (invalidating as unconstitutional flow control ordinance requiring disposal in privately owned facility).

49. This conclusion is drawn from the Court’s jurisprudence creating the “market participant exception” to the Dormant Commerce Clause. See TRIBE, *supra* note 47, at 1088-95. To be sure, the Court has held that Congress can preempt such state action through express legislation. See *Crosby v. Nat’l Foreign Trade Council*, 530 U.S. 363, 373 n.7 (2000); *Wis. Dep’t of Indus., Labor & Human Relations v. Gould, Inc.*, 475 U.S. 282, 289-90 (1986).

50. See Kirsten Engel, *State and Local Climate Change Initiatives: What Is Motivating State and Local Governments to Address a Global Problem and What Does This Say About Federalism and Environmental Law?* 38 *URB. LAW.* 1015, 1028 (2006) (“The activity at the state and local level

Opponents of state and local sustainable commerce initiatives have maintained not only that minimal environmental benefits will be realized by affected citizens who bear all associated economic costs, but also that any environmental benefits achieved by local and state sustainable commerce initiatives are neutered by the absence of parallel programs in growing industrial economies such as China and India.⁵¹ Challengers also argue that a definitive nexus should exist between implementation of specific sustainable commerce initiatives with specific environmental benefits to local and state citizenry.⁵²

Nevertheless, the effects on public welfare of state/local sustainable commerce initiatives extend far beyond simple climate-or energy-based metrics.⁵³ These initiatives are fueled by market-driven forces recognizing continued U.S. economic growth across a wide spectra of global markets can only be sustained by continued rapid shifts towards sustainable corporate and governmental operations which address public health, environmental, and natural resource impacts.⁵⁴ Global markets are now a significant factor effecting governmental and corporate functions including the availability, access, and pricing of capital and the selection of sites for new business operation and facilities.⁵⁵ Industries within numerous business sectors report these same global market forces now influence the conception, design, and manufacturing of new products and services as well as the installation of new, low-carbon technology replacements for energy production, manufacturing, and transportation systems.⁵⁶

The linkage between the public health and environmental risks of global climate change (GCC) and long term economic stability in the US has been well studied. In the most complete review to date, the Stern Review has detailed key public health and environmental risks for each major sector of economic activity among industrialized countries.⁵⁷ Many U.S. risks have

seems to be driven by the prospect of local economic benefits, political opportunism, and genuine concern that some government response to climate change should be forthcoming in the absence of strong federal leadership.”)

51. See *Okeson v. City of Seattle*, 150 P.3d 556, 564 (Wash. 2007); see also MAYOR NICKEL’S COMM’N ON CLIMATE PROTECTION, SEATTLE, A CLIMATE OF CHANGE: MEETING THE KYOTO CHALLENGE 3–4 (2006), available at <http://www.seattle.gov/climate/PDF/Seattle/ClimateReport.pdf>.

52. See *Okeson*, 150 P.3d at 564.

53. For examples of local economic effects that sustainable commerce initiatives can produce, see NICHOLAS STERN, STERN REVIEW: THE ECONOMICS OF CLIMATE CHANGE 1, 273 (2006) [hereinafter STERN REVIEW].

54. *Id.* at 269–81.

55. *Id.*

56. *Id.*

57. See generally STERN REVIEW, *supra* note 53.

been detailed in studies lead by Laurence Kalkstein and others who report changes in average temperature ranges around the globe will not only increased heat related deaths in urban hypersensitive populations (the very young and the old), but will also dramatically increase incidences of various vector-borne diseases.⁵⁸

In addition, to the extent that unemployment presents a public health problem,⁵⁹ the ability of sustainable commerce initiatives to create well-paying and stable jobs also satisfies a required nexus between state interest and public action. Economic development, including job creation, is a long-standing, judicially recognized rationale for development and implementation of local and state environmental programs.⁶⁰ Analysis of the various market-based foundations for sustainable commerce initiatives can prove useful to local and state governmental and industry leaders as they craft needed legal and regulatory infrastructure addressing sustainable commerce objectives and targets; such initiatives directly impact state and local economic growth, natural resources management, workforce development, and industrial infrastructure development.⁶¹ Understanding these local and state impacts provides valuable guidance for government and corporate leaders to craft the most effective means to achieve sustainable commerce goals with an eye towards policy—as well as judicial—scrutiny of the rationale and means chosen.⁶²

These public health and environmental threats from GCC are effecting economic development and global markets—the forum where U.S. goods and services must compete—in nations from Nauru to Japan, from Bangladesh to China.⁶³ As increasing research demonstrates that GCC will likely produce significant increases in infectious and water-borne disease, these communities are shifting their spending and economic priorities to support goods and services which mitigate these risks.⁶⁴ These same public health and environmental risks are now part of the environmental health planning among U.S. state and local governments as Kalkstein and others highlight US risks from increased tropical diseases from heat-related infectious disease vectors (e.g. dengue fever and malaria from mosquitoes). A key factor for local

58. Laurence S. Kalkstein & J. Scott Greene, *An Evaluation of Climate/Mortality Relationships in Large U.S. Cities and the Possible Impacts of a Climate Change*, 105 ENVTL. HEALTH PERSP. 84 (1997).

59. See generally STERN REVIEW, *supra* note 53.

60. See *Kelo v. City of New London*, 545 U.S. 469, 484 (2005) (“Promoting economic development is a traditional and long accepted function of government.”).

61. See generally sources cited *supra* note 24.

62. *Id.*

63. See generally STERN REVIEW, *supra* note 53.

64. See generally sources cited *supra* note 24.

involvement is also the effect on disadvantaged communities from environmental threats. As one report stated:

Where U.S. Energy Policy is concerned, African Americans are proverbial canaries in the mineshaft. We are on the frontline of the likely social, environmental, and economic upheaval resulting from climate change. As a consequence, energy policy and climate change are issues of fundamental importance to the African American community.⁶⁵

What follows, then, are intertwined public health, environmental and economic rationales for aggressive construction and deployment of sustainable commerce initiatives by state and local governments. To those who argue that public health and environmental risks do not adequately provide legal bases for local/state sustainable commerce initiatives, there are, at a minimum, five legal foundations which address such critics.

1. Foundation One: SC Initiatives That Foster Transition to a Low-Emissions Economy Create New Economic Opportunities Across a Wide Range of U.S. Industries and Sectors of the Workforce.

Market estimates portend sales of low-carbon technologies and products will total over \$500 billion per year by 2050.⁶⁶ Not surprisingly, cities, states, regions, industries, and corporations are actively formulating programs to position themselves to take advantage of these new market opportunities.⁶⁷ Some local and state governments view market growth in low-carbon technologies and products as foundations for future business and industrial growth supporting enhanced tax revenues to fund a wide range of initiatives including transportation and utility infrastructure.⁶⁸ Local and state governmental agencies also envision sustainable commerce initiatives as a catalyst creating job growth for unskilled and semi-skilled workers for whom job and wage growth has lagged significantly in comparison to the skilled and white collar workforce over the past decade.⁶⁹ Skilled workforce development is also anticipated to be enhanced by sustainable commerce initiatives among

65. CONGRESSIONAL BLACK CAUCUS FOUNDATION, *AFRICAN AMERICANS AND CLIMATE CHANGE: AN UNEQUAL BURDEN* 2 (2004).

66. See STERN REVIEW, *supra* note 53, at 272.

67. See generally Edna Sussman, *Reshaping Municipal and County Laws to Foster Green Building, Energy Efficiency, and Renewable Energy*, 16 N.Y.U. ENVTL. L.J. 1 (2008) (giving an overview of some state and local actions to take advantage of these opportunities).

68. See STERN REVIEW, *supra* note 53, at 272.

69. *Id.*

workers displaced by the loss of U.S. manufacturing jobs to China, India, and other traditionally lower-wage overseas economies.⁷⁰ Policy analysts note some carbon-intensive energy and manufacturing industries will be challenged by shifts to a low-carbon economy, but also point out that many other industrial sectors will see global market growth.⁷¹ Significant investments in low-carbon energy, manufacturing, and service technologies continue to create new market opportunities across numerous industry sectors; these market impacts are producing disproportionate opportunities for economic growth in rural areas of the country not dominated by high-technology, heavy manufacturing, chemical and petrochemical, or biotechnology and biomedical industries.⁷² Current estimates of the existing market size for renewable energy generation products alone is estimated at \$38 billion providing employment opportunities for over 1.7 million people.⁷³ Market capitalization of solar power related businesses is now reported to have grown to over \$27 billion through the end of 2006.⁷⁴ Analysis of ongoing growth in biofuels consumption is estimated to continue at over 15% per year, creating a total market size in excess of \$15 billion.⁷⁵

Regional governmental organizations promoting sustainable commerce initiatives are also now a significant market driver for low-carbon energy technology, equipment and construction.⁷⁶ Joint government and corporate promotion of new low-carbon industries based on energy security concerns is also expected to strengthen demand for low-carbon technology infrastructure for the next fifty years.⁷⁷ One informed estimate of the future market for low-carbon energy technologies, the International Energy Agency's (IEA) *Technology Perspectives* report, is often cited by government and industry planning groups; IEA studies have evaluated total investments required to support low-carbon power generation technologies following a market scenario where total energy-related greenhouse gas and carbon emissions are reduced to current levels by 2050.⁷⁸ IEA's reports estimate cumulative investments in low-carbon technologies by 2050 could total over \$13 trillion,

70. *Id.*

71. *Id.*

72. See *Wood-based Ethanol Plant Slated for Georgia*, Renewable Energy World.com (Feb. 8, 2007), available at <http://www.renewableenergyaccess.com/rea/news/article/2007/02/wood-based-ethanol-plant-slanted-for-georgia-47371>.

73. See STERN REVIEW, *supra* note 53, at 270.

74. *Id.*

75. *Id.*; see also JOEL MAKOWER, STATE OF GREEN BUSINESS 2008 at 6, 16 (2008).

76. See, e.g., Regional Greenhouse Gas Initiative, About RGGI, <http://www.rggi.org/about.htm> (last visited May 21, 2008).

77. See STERN REVIEW, *supra* note 53, at 270.

78. *Id.*

accounting for over 60% of all power generation by the middle of the century;⁷⁹ other industry scenarios report long-term investment in low-carbon power generation could total even higher levels of investment.⁸⁰ Oil industry studies report global markets for emissions reductions could total \$1 trillion cumulatively through 2012.⁸¹ Such large financial and infrastructure shifts towards low-carbon technologies are being accompanied by equally significant shifts in U.S. workforce and labor needs.⁸² If the number of jobs related to low-carbon technologies rise from the current level of 1.7 million workers in line with these projected investments, over 25 million people could be working in low-carbon related businesses worldwide by the year 2050.⁸³

2. Foundation Two: Financial Markets Are Creating New Security Instruments Which Provide New Capital Sources

Over the past five years, new financial instruments have been created to provide targeted capital sources to support low-carbon technology implementation.⁸⁴ These include not only carbon trading systems, but also sustainable commerce-directed venture capital funds and insurance underwriting programs.⁸⁵ Carbon credit transactions already provide new revenue resources for small, rural city and county governments to support improved infrastructure development as well as improved environmental performance. Local and state governments as well as corporations now include in their planning and implementation activities consideration of how their capital and investment sources factor sustainable development commitments into their investment decisions.⁸⁶ Local and regional energy utilities include sustainable commerce objectives and targets into their operational planning in order to access long-term financing both to purchase new low-carbon technology as well as to retrofit existing facilities to fulfill future demands for low-carbon energy supplies.⁸⁷

Access to regional, national, and international investment resources will specifically enhance local and state market opportunities for small, start-up low carbon technology enterprises.⁸⁸ Specialty venture capital funds now

79. *Id.*

80. *Id.*

81. *Id.*

82. *Id.*

83. *Id.*

84. *See* MAKOWER, *supra* note 75, at 6, 16.

85. *Id.*; *see also* Stern Review, *supra* note 53, at 271.

86. *See* JOEL MAKOWER ET AL., CLEAN ENERGY TREND 2008, at 10–11 (2008).

87. *Id.* at 5–6.

88. *See* MAKOWER, *supra* note 75, at 26–27.

provide new low-carbon energy firms with access to dedicated capital resources in the form of venture capital and long term investment financing. Recent reports on venture financing in the U.S., Europe, and Japan establish that low-carbon, “clean” technology investment has moved beyond niche investment status, becoming the third largest category of U.S. venture capital investment during 2006. Multi-national insurance and re-insurance firms, realizing broad investment opportunities with low-carbon technology implementation, are also supplying capital funding to underwrite technology investments which address increased infrastructure risks caused by extreme climate events; insurance and risk management firms are also creating new climate-driven insurance products available to both industry and government.⁸⁹ Carbon trading markets, discussed in detail *infra*, present new financial resources available for local and state low-carbon technology investments totaling over \$10 billion per year.⁹⁰ Financial industry reports project that carbon markets supporting low-carbon technology implementation could grow over 200% through 2012.⁹¹

Local and state government sustainable commerce initiatives, targeting future market growth in low-carbon technologies, are attracting investment from clean energy, low-carbon technology markets.⁹² States with abundant natural resources as well as strong transportation infrastructures will attract investments dedicated to building new infrastructure elements that support low-carbon technology growth. States with established scientific and technical expertise are attracting significant investment to support basic and applied research for development of new low-carbon technologies. Not surprisingly, local and state sustainable commerce initiatives now include financial resources for start-up firms which commercialize promising new low-carbon technologies. These financial resources target firms at the developmental stage to sustain the commercial potential and employment base of these firms.⁹³ Sustainable commerce initiatives in California are fueled in part by economic studies projecting that as international initiatives to curb greenhouse gas emissions increase, significant competitive market advantages will be created for California low-carbon technology firms to become globally-dominant industries. Studies estimate the state’s initial low-carbon technology

89. See Christina Ross et al., *Limiting Liability in the Greenhouse: Insurance Risk-Management Strategies in the Context of Global Climate Change*, 26A STAN. ENVTL. L.J. 251 (2007).

90. See STERN REVIEW, *supra* note 53, at 271.

91. *Id.*

92. MAKOWER ET AL., *supra* note 86, at 10–11.

93. See sources cited *supra* note 12.

investments could increase gross state product by \$60 billion and create over 20,000 new jobs divided across all work force skill sets by the year 2020.⁹⁴

3. Foundation Three: Sustainable Commerce Continues to Provide Opportunities for Permanent Reductions in Government and Business Costs Through Energy and Natural Resource Savings, Operational Efficiencies, and Process and Product Innovation. These Reduced Costs in turn Create New Revenue Streams Which Can Be Dedicated for Robust Public Health and Economic Infrastructure Programs.

Local and state governments, in concert with business and industry groups, are employing sustainable commerce initiatives to isolate operational inefficiencies in energy and natural resource use as well as product manufacturing and distribution.⁹⁵ These sustainable commerce initiatives to date include re-examination of tax and other governmental subsidies which introduce inefficiencies in energy generation, product manufacture, and transportation systems. Once these taxes and subsidies are removed, improvements in government and industry operations are expected to create immediate cost-advantages for goods and services within both public and private markets.⁹⁶ Multi-national corporations report tens of billions of dollars in annual cost savings from sustainable commerce initiatives.⁹⁷ For example, BASF reduced greenhouse emissions by 38% between 1990 and 2002 through a series of process changes and efficiency measures thereby cutting annual operational costs by 500 million at one facility alone.⁹⁸ British Petroleum established corporate targets to reduce greenhouse gas emissions by 10% of reported 1990 levels by the year 2010.⁹⁹ This target achieved over \$650 million in net present value savings to the company through increased operational efficiency and improved energy management.¹⁰⁰ BP reports allocation of over \$350 million per year in new investment capital specifically for low-carbon technology implementation from the years 2004–2010.¹⁰¹

94. *Id.*

95. *See* STERN REVIEW, *supra* note 53, at 269, 274.

96. *See generally* sources cited *supra* note 24.

97. *See* STERN REVIEW, *supra* note 53, at 271.

98. *Id.* at 273.

99. *Id.*

100. *Id.*

101. *Id.*

4. Foundation Four: Sustainable Commerce Initiatives Provide Regulatory Tools to Enhance Energy Security as well as Public Health and Environmental Infrastructure by Reducing Structural Energy and Natural Resource Costs.

Energy security, including stable wholesale energy costs and dependable energy supplies, is an important economic resource for local and state economies and their constituent businesses and industries.¹⁰² Energy security is often framed in terms of geopolitical risks of physical interruption of energy supplies; however a broader definition of energy security for local and state economies encompasses secure, reliable, consistent, and competitive energy supplies.¹⁰³ It is not a coincidence that California is at the forefront of sustainable commerce initiatives including low-carbon energy production.¹⁰⁴ California sustainable commerce initiatives often cite the severe disruption of the state's economy in the 1990s—created by energy market speculation engineered by out-of-state energy brokers—as a major driver for allocating state financial and programmatic resources towards implementation of low-carbon energy technology systems to power California cities and industries.¹⁰⁵ California, Washington, and other states look forward to meeting a number of long-term energy security objectives by implementing aggressive sustainable commerce initiatives; these energy and security objectives include not only promoting energy and natural resource efficiency, but also reducing peak energy demand, along with lowering economic stress from changes in national and global energy prices.¹⁰⁶

Established U.S. manufacturing industries, particularly the automotive and petrochemical industries, have struggled to transition their established, high-carbon technology facilities—operating at relatively low energy efficiency—to facilities equipped with energy efficient, low-carbon technology; sustainable commerce initiatives provide local and state governments with means to assist the transition of these industries to lower cost, sustainable energy profiles.¹⁰⁷ Sustainable commerce initiatives also provide local and

102. See Barry G. Rabe et al., *State Competition as a Source Driving Climate Change Mitigation*, 14 N.Y.U. ENVTL. L.J. 1, 28–29 (2005).

103. For complete information on California Sustainable Commerce initiatives, see California Climate Change Portal, <http://www.climatechange.ca.gov/> (last visited Mar. 22, 2009).

104. *Id.*

105. See Tim Duane, *Institutions and Climate Change: Lessons from the California Energy Crisis in 2000–2001*, Feb. 7, 2002, available at http://www.climatechange.ca.gov/events/2002-02-15_PRESENTATIONS/Institutions_Policy.ppt.

106. See generally sources cited *supra* note 24.

107. See generally sources cited *supra* note 24. See also Sussman, *supra* note 67 (providing overview of some state and local actions to take advantage of these opportunities).

state governments with new opportunities to better address legacy air pollution problems caused by older, high-carbon manufacturing installations coupled with car-dependent transportation systems; sustainable commerce initiatives thus provide local and state government and industries with an effective means of rapidly hedging against economic and social vulnerability to key local industries dependent on single-fuel energy supplies.¹⁰⁸ For example, state governments in countries with large coal reserves, including the United States, Australia, and South Africa, are actively implementing low-carbon technologies to integrate this high-carbon energy source into sustainable commerce energy programs through advanced coal liquefaction technologies which provide interim energy needs while low-carbon technologies are put in place.¹⁰⁹ Policy analysts, however, point with concern to the complete life-cycle of carbon emissions from coal-to-liquid conversion in the manufacture of transport fuels which can be almost double the total carbon emissions from using crude oil alone.¹¹⁰ Extensive deployment of new carbon capture and storage technology, now undergoing commercial demonstration in various forms around the United States, may thus be needed to reconcile the issues raised by including coal in existing sustainable commerce initiatives with the overall goal to reduce global greenhouse gas emissions.¹¹¹

5. Foundation Five: Sustainable Commerce Initiatives Provide Resources to Address Legacy Environmental, Public Health, Infrastructure, and Waste Management Problems

The characterization, remediation, and redevelopment of legacy waste-contaminated sites continue to be a budget priority for local and state governments around the United States.¹¹² Such sites include inactive or abandoned underground storage tank sites as well as municipal or commercial waste landfill sites (discussed in greater detail *infra*).

One particular example of a legacy environmental problem, Brownfield sites, continues as a high-priority item in need of targeted resources and

108. For complete information on federal government initiatives to address legacy environmental programs through sustainable commerce initiatives, see EPA, *Brownfields and Land Revitalization*, available at <http://www.epa.gov/brownfields/> (last visited Mar. 22, 2009).

109. See STERN REVIEW, *supra* note 53, at 276.

110. *Id.*

111. *Id.*

112. See Amanda Siek, Comment, *Smart Cities: A Detailed Look at Land Use Planning Techniques that Are Aimed at Promoting Both Energy and Environmental Conservation*, 7 ALB. L. ENVTL. OUTLOOK J. 45, 64–65 (2002).

attention by both state and federal agencies.¹¹³ In local and state government planning, a Brownfield is land previously used for local government, industrial, or commercial purposes, that may be contaminated by low concentrations of hazardous substances, but which has the potential to reenter governmental or commercial use once cleaned up; more severely contaminated land with high concentrations of hazardous substances, such as a Superfund hazardous waste site, does not fall under the Brownfield classification.¹¹⁴ Brownfield sites commonly exist in municipal business or industrial districts as well as previously active commercial parks; small Brownfield sites have also been identified in older residential neighborhoods where prior commercial uses such as dry cleaning facilities or gas stations discharged subsurface contaminants.¹¹⁵ In the 1980s and 1990s, site management options to remediate Brownfield sites to safe standards often engendered costs greater than what land could be worth after reclamation and redevelopment; such sites therefore often have not been developed in parallel with other redevelopment activities in the immediate area.¹¹⁶ Sustainable commerce initiatives, however, over the past decade have aided Brownfield redevelopment by engendering creation of new private and public partnerships which alter sit risk distribution favoring site remediation with more sophisticated and cost-effective site management methods.¹¹⁷

Brownfield site elements within sustainable commerce initiatives often include targeted funds to partner government agencies with private entities to better enable review and approval of developer proposals to remediate and restore Brownfield sites. For example, local and state governments now regularly cost-share site assessment and evaluation to quantify site cleanup costs so that Brownfield redevelopment regenerates contaminated sites for revenue-producing uses which deploy low-carbon energy or manufacturing technology.¹¹⁸ Case studies of sustainable commerce initiatives to regenerate Brownfield sites highlight the fact that unrecognized site contamination can be encountered—such as underground storage tanks and other buried

113. Oni N. Harton, Note, *Indiana's Brownfields Initiatives: A Vehicle For Pursuing Environmental Justice or Just Blowing Smoke?* 41 IND. L. REV. 215, 219, 223, 226–27, 240 (2008).

114. 42 U.S.C. § 9601(39) (2006) (defining term “Brownfield”); see Siek, *supra* note 112, at 65; see also Michael B. Gerrard, *New York State's Brownfields Programs: More and Less than Meets the Eye*, ALB. L. ENVTL. OUTLOOK J., Winter 1999, at 18.

115. See Harton, *supra* note 113, at 217–20.

116. See generally sources cited *supra* note 24.

117. Julianne Kurdila & Elisa Rindfleisch, *Funding Opportunities for Brownfield Redevelopment*, 34 B.C. ENVTL. AFF. L. REV. 479, 479–80 (2007).

118. *Id.*

wastes—which increase cleanup costs and delay site reclamation.¹¹⁹ To ensure sites are properly evaluated, sustainable commerce-driven partnerships between commercial property developers and government agencies often require that candidate sites be thoroughly investigated prior to approving remedial cleanup funding.

Insurance and risk management firms are also now active participants in sustainable commerce initiatives in order to underwrite risks unique to the acquisition and adaptive reuse of Brownfield sites.¹²⁰ Successful Brownfield development can also require advanced and specialized risk management products as well as appraisal analysis techniques such as contingency valuation. Insurance firms now also provide key technical knowledge to industry and government sustainable commerce partnerships because the highest and best use of Brownfield sites may be affected by the residual post-remediation contamination and stigma and potential for third-party liability.¹²¹

Over the past ten years, innovative industry and government sustainable commerce initiatives have evolved to enable Brownfield remediation through novel partnerships between the public and private sector financial and environmental firms.¹²² For example, environmental firms now partner with insurance companies to underwrite Brownfield cleanup by guaranteeing cleanup costs for well-characterized contaminated sites so as to define or limit developer and government liability to both overall environmental remediation costs as well as contaminant-related litigation.¹²³ Environmental firms on these Brownfield projects perform extensive investigations of a candidate site to bolster credibility of cleanup cost estimates and ensure financial partner firms are provided adequate information from which to manage site remediation costs.¹²⁴ Venture capital firms seeking investments in the real estate market have also partnered in Brownfield sites in two ways; the first is by funding start-up firms conducting engineering and technology research to address site-specific Brownfield remediation methods, the second is by funding for specific commercial development of Brownfield properties.¹²⁵

The Atlantic Station Brownfield in downtown Atlanta, Georgia is recognized as a particular success for such an industry, government, and

119. Richard B. Stewart, *A New Generation of Environmental Regulation?*, 29 CAP. U. L. REV. 21, 69–70 (2001).

120. See Ross et. al. *supra* note at 89.

121. Steven Ferrey, *Converting Brownfield Environmental Negatives into Energy Positives*, 34 B.C. ENVTL. AFF. L. REV. 417, 460–67 (2007).

122. Miral Alena Sigurani, *Brownfields: Converging Green, Community, and Investment Concerns*, ARIZ. ATT'Y, Dec. 2006, at 44–45.

123. *Id.* at 41.

124. *Id.*

125. See Kurdila & Rindfleisch, *supra* note 117, at 497–98.

insurance company cooperation.¹²⁶ Atlantic Station is a large urban renewal project developed by AIG Global Real Estate in partnership with Jacoby Development.¹²⁷ Officially opened in 2005, the 138 acres of mixed-use land development is located on the former Atlantic Steel Mill site which sat unused for decades due to extensive subsurface soil contamination by various hazardous substances including toxic metals.¹²⁸ AIG's corporate sibling, AIG Environmental, worked with the local government and developer team to characterize remediation at the site and create cost-effective remediation plans for re-use of the property; complete redevelopment of this site will include 15,000,000 square feet of retail, office, residential and hotel space as well as eleven acres of public parks.¹²⁹ In 2004, Atlantic Station received the EPA's Phoenix Award as the Best National Brownfield Redevelopment and in 2005, the Sierra Club's America's Best New Development Projects listing.¹³⁰

III. SUSTAINABLE COMMERCE INITIATIVES BY LOCAL GOVERNMENT

Tradable Greenhouse Gas Emission Credits in Ringgold and Catoosa County, Georgia.

Ringgold, the county seat of Catoosa County, Georgia, provides an insightful and instructive case study of how sustainable commerce initiatives, initially created as part of international regulatory agreements such as the Kyoto Protocol, now impact communities large and small around the United States.¹³¹ As described below, Ringgold and Catoosa County recently implemented sustainable commerce initiatives allowing this sylvan North Georgia community to actively participate in market-based low-carbon initiatives.¹³²

126. Amy Pilat McMorrow, Comment: *CERCLA Liability Redefined: An Analysis of the Small Business Liability Relief and Brownfields Revitalization Act and Its Impact on State Voluntary Cleanup Programs*, 20 GA. ST. U. L. REV. 1087, 1088–89 (2004).

127. For information on the development of Atlantic Station, see Atlantic Station Redevelopment Overview, <http://www.atlanticstation.com/press/presskit/RedevelopmentOverview1206.pdf> (last visited Mar. 8, 2009).

128. *Id.*

129. *Id.*

130. See Press Release, *Corrective Action Success: Atlantic Steel* (Oct. 2007), available at <http://www.epa.gov/correctiveaction/success/atlan11-07.pdf>; Press Release, *Sierra Club, Building Better* (Dec. 1, 2005), available at <http://www.sierraclub.org/dc/sprawl/bec/building-better.html>.

131. See Randall Franks, *County Set to Cash in Carbon Credits*, CATOOSA COUNTY NEWS, June 19, 2007, available at http://news.mywebpal.com/news_tool_v2.cfm?pnpid=724&show=archive_details&ArchiveID=1282629&om=1.

132. *Id.*

In the Kyoto Protocols, specified developed countries are tasked to “individually or jointly, ensure that their [overall] aggregate anthropogenic carbon dioxide equivalent emissions of the greenhouse gases . . . [are reduced] . . . with a view to reducing their overall emissions of such gases . . . below 1990 levels in the commitment period 2008 to 2012.”¹³³ As a byproduct of this Kyoto Protocol objective, various cap and trade systems have been developed within which approved organizations can sell carbon credits through contract-based private ordering systems.¹³⁴ Cap and trade systems enable various parties to generate fungible, tradable carbon credits through either the reduction of their own greenhouse gas emissions or through verified, measurable land management practices which promote carbon sequestration; these programs allow parties to gain credits by either reducing emissions or carbon sequestration programs, or both.¹³⁵ In the United States, cap and trade programs for airborne pollutants were created in the 1990s as part of sulfur dioxide emissions trading programs; it was the success of these trading programs which subsequently encouraged corporate as well as government leaders to support similar market-based approaches to reduce greenhouse gas emissions, and created new opportunities for private and public investments in low carbon energy systems.¹³⁶

State and local governments have joined business and industry as active proponents of tradable carbon credit programs.¹³⁷ California’s enactment of AB32, The Global Warming Solutions Act of 2006, marked a critical milestone in state-mandated tradable carbon management initiatives by committing both the private and public sector to identify and manage emissions of carbon dioxide.¹³⁸ As the largest state economy in the US, California’s sustainable commerce initiative, in concert with the Regional Greenhouse Gas Initiative (RGGI) of nine Northeastern and Mid-Atlantic states, creates a substantial initial incubator market for low-carbon

133. Kyoto Protocol, *supra* note 16, art. 3.

134. *Id.*, art. 17. See generally Rutger de Witt Wijnen, Emissions Trading Under Article 17 of the Kyoto Protocol, in *LEGAL ASPECTS OF IMPLEMENTING THE KYOTO PROTOCOL MECHANISMS: MAKING KYOTO WORK* 403, 409 (David Freestone & Charlotte Streck eds., 2005).

135. Wijnen, *supra* note 134, at 409; see also Engel, *supra* note 34, at 1568.

136. See 42 U.S.C. §§ 7651–7651(b) (2006) (creating acid rain trading program). The 1990 acid rain trading program was based in part on earlier programs designed to phase out the use of CFCs and to eliminate lead additives from gasoline. See Thomas W. Merrill, *Innovations in Environmental Policy: Explaining Market Mechanisms*, 2000 U. ILL. L. REV. 275, 283; see also Richard G. Newell & Kristian Rogers, *Leaded Gasoline in the United States: The Breakthrough of Permit Trading*, in *CHOOSING ENVIRONMENTAL POLICY: COMPARING INSTRUMENTS AND OUTCOMES IN THE UNITED STATES AND EUROPE* 175 (Winston Harrington et al., eds., 2004).

137. See generally sources cited *supra* note 24.

138. See California Climate Change Portal, *supra* note 24.

technologies and carbon trading programs within states accounting for over 20% of the total U.S. economy.¹³⁹

The Chicago Climate Exchange (CCX), founded in 2003, now provides state and local governments, businesses, and individuals in the United States the ability to buy and sell carbon credits recognized under the Kyoto Protocol.¹⁴⁰ CCX provides a fully-integrated GHG trading market linked with third-party verification of emission reduction or credit purchase and was designed around the U.S. EPA Acid Rain cap and trade system that sought to reduce electric utility emissions linked to acid rain.¹⁴¹ The CCX is a voluntary, legally binding U.S. trading system established to aid emissions reductions for six major greenhouse gases (GHGs): carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), sulfur hexafluoride (SF₆), perfluorocarbons (PFCs) and hydrofluorocarbons (HFCs).¹⁴² To participate in the CCX as a greenhouse gas credit-generating project, applicants must sequester, destroy, or reduce GHG emissions from one of a number of candidate activities including methane from agricultural, landfill, or coal mine operations, as well as carbon dioxide sequestered through forestry management programs.¹⁴³

Located in the rolling hills of rural northwest Georgia, Ringgold, the county seat of Catoosa County, lies approximately twenty-five miles from downtown Chattanooga, Tennessee.¹⁴⁴ Catoosa County ranks as the thirty-sixth most populous county and the seventh smallest county by area among Georgia's 159 counties.¹⁴⁵ Beginning in 2004, Ringgold and Catoosa County undertook a sustainable commerce initiative which illustrates the opportunities now available to cities large and small, rural and urban, to actively reduce greenhouse gas emissions while addressing legacy environmental hazards.

The path by which Ringgold created sustainable commerce initiatives, as documented in various public records, began in 2004, with two main developments. First, Catoosa County completed a five-year county landfill

139. *Id.*

140. *See* Kyoto Protocol, *supra* note 16, art. 17. *See generally* Wijnen, *supra* note 134, at 409.

141. *See* Chicago Climate Exchange, Key Features, available at <http://www.chicagoclimatex.com/content.jsf?id=25> (last visited Mar. 8, 2009); Peter L. Gray & Geraldine E. Evans, *Carbon Accounting: A Practical Guide for Lawyers*, 22 NAT. RESOURCES & ENV'T 41 (2008).

142. *Id.*

143. *See* Chicago Climate Exchange, *supra* note 141.

144. As of 2006, Catoosa County had a population of 62,016. *See* U.S. Census Bureau, State & County Quickfacts, Catoosa County, Georgia, <http://quickfacts.census.gov/qfd/states/13/13047.html> (last visited Mar. 22, 2009). For more information and statistics on both Ringgold and Catoosa County, Georgia, *see* Catoosa County Georgia, <http://www.catoosa.com> (last visited Mar. 22, 2009).

145. *See* <http://www.cviog.uga.edu/Projects/gainfo/gastat.htm> (navigate to Georgia Counties Ranked by Population and Georgia Counties Ranked by Area) (last visited Mar. 7, 2009).

closure process which required the county to fund, on an ongoing basis, post-closure monitoring and related corrective action requirements.¹⁴⁶ Second, the U.S. EPA included Ringgold and Catoosa County in the non-attainment area of the Chattanooga metropolitan statistical area (ChattMSA) classifying both the city and county as non-attainment areas for two priority air pollutants—ozone and particulate matter.¹⁴⁷ Catoosa County's 2004 landfill closure, from a public works perspective, thus created an ongoing financial liability for a county actively working to be both a good environmental citizen—responsible to state and federal enforcement actions—and a cost-effective provider of services to county residents.¹⁴⁸

Catoosa County officials subsequently sought options to mitigate these long-term landfill management costs.¹⁴⁹ County officials and commissioners attended a series of regional and national meetings outlining how methane recovery and management programs could be created to reduce potential greenhouse gas release from inactive landfills.¹⁵⁰ Regional meetings included in-state public meetings discussing landfill gas-to-energy projects and U.S. greenhouse gas trading exchanges; national meetings included the EPA's Landfill Methane Outreach Program (LMOP) conference which provides local and state governments with technology options to recover and manage landfill-derived methane.¹⁵¹

Catoosa County officials subsequently envisioned a funding program for cost-effective management of the closed Catoosa County landfill; by capturing the landfill's leaking methane gas to generate power, carbon credits could be created which would be marketable on Chicago Climate Exchange.¹⁵² Such

146. See Landfill Gas Leak Solved? Catoosa County News, Feb. 18, 2005, available at <http://www.catt.com/article.php?story=20050218094929322>.

147. See Letter from Carol A. Couch, Director, Environmental Protection Division to James I. Palmer, Regional Administrator at 2 (Sept. 1, 2004), available at http://www.epa.gov/pmdesignations/documents/04Recommendations/4/s/Georgia_J.pdf; see also *Catoosa County v. EPA*, No. 05-1200 (D.C. Cir. filed June 13, 2005) (consolidated with *Catawba County v. EPA*, No. 05-1064, D.C. Cir. filed Mar. 11, 2005) (challenging nonattainment designation).

148. See Approval and Promulgation of Air Quality Implementation Plans; Tennessee and Georgia, 70 Fed. Reg. 50,199 (Aug. 26, 2005). For more information about the Early Action Compact Program see Amanda L. Maris, Casenote, *Clean Air, Clean Conscience: Evaluating the Early Action Compact Program Under the Shadow of the Clean Air Act in the Five Year Wake of Whitman v. American Trucking Associations, Inc.*, 28 N.C. CENT. L.J. 260 (2006); see also Randall Franks, *Catoosa Could Be Closer to Setting Up Methane Gas Sale Business*, CATOOSA COUNTY NEWS, Sept. 18, 2007; *United States v. Catoosa County*, No. 4:02-cr-00048-HLM (N.D. Ga. filed June 20, 2001).

149. Irvin, et al., *supra* note 2, at 592.

150. *Id.* at 592-93.

151. *Id.* at 593.

152. See Catoosa County Comm'n Minutes, Feb. 20, 2007, available at <http://www.catoosa.com/minutes/2007Minutes/2-20-07.htm>; Catoosa County Board of Commissioners Minutes, June 19, 2007, available at <http://www.catoosa.com/minutes/2007Minutes/6-19-2007.htm>;

a landfill closure program, to properly qualify as an eligible project for carbon credits sales, would have to satisfy a series of CCX-defined requirements. First, Catoosa County had to demonstrate that its landfill was not already governed by new source performance standards under the Clean Air Act which already required the county to begin landfill methane collection.¹⁵³ Second, Catoosa County had to demonstrate the county's carbon dioxide-equivalent emissions were below standards for crediting greenhouse gas reductions from a specific locale; the county met this standard because the only carbon dioxide emissions, under CCX guidelines, that the county was responsible for were gasoline, diesel, and natural gas usage for operating county vehicles and county buildings.¹⁵⁴ County officials subsequently published public notices of the intent to sell carbon credits generated by its landfill management programs. The county continues active management of responses to inquiries generated by public notices in order to finalize a carbon credit sales program.¹⁵⁵

IV. SUSTAINABLE COMMERCE INITIATIVES BY LOCAL INDUSTRY

Global Markets Requiring U.S. Manufacturers to Meet Vendor Specifications, including Environmental and Public Health Metrics, for Corporate Operations and Life Cycle Analysis of Products: Murray Corporation.

Extended Product Responsibility (EPR) is a key element of sustainable commerce programs by multi-national firms. EPR focuses attention on the environmental impacts of product systems over their entire life instead of limiting attention to the moment when the products are manufactured.¹⁵⁶ Fueled by EU Life Cycle Assessment regulations, EPR programs require product providers to identify and minimize product-associated environmental impacts within each stage of a product's life cycle—through changes in product design and construction as well as product management after the useful life of the product.¹⁵⁷ Underlying EPR programs is the concept that each participant

see also CHICAGO CLIMATE EXCHANGE, OVERVIEW AND FREQUENTLY ASKED QUESTIONS: LANDFILL METHANE OFFSETS IN CHICAGO CLIMATE EXCHANGE, http://www.chicagoclimatex.com/docs/offsets/Landfill_Methane_Offsets_faq.pdf.

153. Chicago Climate Exchange, CCX Landfill Methane Gas Project Guidelines, *available at* http://www.chicagoclimatex.com/docs/offsets/Lanfill_Gas_Protocol.pdf (last visited Mar. 8, 2009).

154. *Id.*

155. *See* Franks, *supra* note 131.

156. *See* EPA, Product Stewardship, <http://www.epa.gov/epr/> (last visited Mar. 19, 2009).

157. *Id.*

involved in producing and providing a product affects that product's environmental impacts, including production impacts derived from a manufacturer's selection of input material and production processes, as well as downstream impacts from product transportation, sale, use and disposal.¹⁵⁸ Sustainable commerce initiatives which incorporate EPR programs thus obligate product manufacturers and retailers to consider options to reclaim products at the end of their useful consumer life, in order to recapture the natural resources consumed to produce those items and to diminish environmental impacts of future generations of goods and services.¹⁵⁹

European corporations began integrating EPR principles into various levels of their organizational structures in the 1980s.¹⁶⁰ The UK-based home improvement retailer B&Q provides a case study of how extensively European firms have embraced and adopted EPR programs.¹⁶¹ B&Q has integrated an aggressive sustainable commerce program into the design and operation of individual stores, the selection of products and product suppliers, and the different levels of corporate operations. B&Q clearly states to customers, and suppliers alike that their company seeks "to understand, manage, and reduce the impact our products have on the environment."¹⁶² Consequently, B&Q has a duty to ensure that the environmental impact of each product is as low as possible, whether it is made from natural resources (like wood) or based upon synthetic ingredients. To achieve this corporate-wide objective, B&Q focuses significant resources on monitoring supplier sustainable commerce performance in order to ensure it meets its own corporate sustainable commerce objectives and targets—resources which include hands on evaluation of the environmental impacts of supplier operations and products.¹⁶³ B&Q "define[s] standards for the environmental performance of . . . product suppliers and regularly assesses each supplier's performance against these standards" in order to ensure they "address the environmental issues associated

158. See generally DAVIS ET AL., *supra* note 9, at 1-1 ("Extended Product Responsibility is the principle that the actors along the product chain share responsibility for the life-cycle environmental impacts of the whole product system, including upstream impacts inherent in the selection of materials for the products, impacts from the manufacturer's production process itself, and downstream impacts from the use and disposal of the products.").

159. *Id.* at 1-3.

160. *Id.* at 1-4.

161. For a summary of the corporate sustainable commerce initiatives by B&Q, see B & Q, *Social Responsibility*, available at http://www.diy.com/diy/jsp/bq/templates/content_lookup.jsp?content=/aboutbandq/social_responsibility_2007&menu=default (last visited Mar. 9, 2009).

162. See B&Q, *Social Responsibility: Environment*, available at http://www.diy.com/diy/jsp/bq/templates/context_lookup.jsp?content=/aboutbandq/social_responsibility_2007/environmental_main.jsp&menu=aboutbandq (last visited Mar. 9, 2009).

163. *Id.*

with the life-cycles of the products they supply.”¹⁶⁴ It also works with suppliers “to reduce their impact on the environment and manage the challenges of sustainable environmental development” by establishing “clear visibility through all our supply chains, so that [they] know who is making every product [they] sell and can identify the critical environmental issues associated with its lifecycle.”¹⁶⁵ The company has implemented product-disposal programs including working “with suppliers to design products that can be recycled.”¹⁶⁶ B&Q’s product packaging initiatives also “[d]evelop guidelines, based on [their] experience, to help product suppliers meet [their] policy requirements” by working “to minimize . . . packaging to that required to be fit for purpose.”¹⁶⁷

As a major EU home improvement retailer, B&Q is a significant retailer of consumer goods from small and large U.S. businesses operating from locations in major U.S. metropolitan areas, as well as small rural communities.¹⁶⁸ To maintain their status as B&Q-approved vendors, U.S. suppliers must address vendor obligations. One such candidate B&Q vendor was the Murray Corporation which manufactured bicycles and power lawn equipment from its sprawling manufacturing facility southwest of Nashville, Tennessee, in the small town of Lawrenceburg. Murray created a corporate environmental management system (EMS) that set internal, self-imposed timelines to identify and minimize toxic chemical usage and waste generation. This EMS was developed, in part, to codify Murray’s environmental performance and to satisfy B&Q supplier sustainable commerce requirements, which included aggressive benchmarks to minimize supplier environmental impacts. The Murray EMS coordinated new product design functions with input from environmental and facility management staff; toxic chemical-intensive finishes and lubricants, as well as energy-intensive manufacturing processes, could thus be identified while a new product was still on the drawing board. Internal timelines were established by Murray’s EMS to minimize toxic chemical usage as well as natural resource consumption. With

164. B&Q, *Social Responsibility: Supplier Environmental Performance*, http://www.diy.com/diy/jsp/bq/templates/content_lookup.jsp?content=/aboutbandq/social_responsibility_2007/supplier_environmental_performance.jsp&menu=aboutbandq (last visited Mar. 9, 2009).

165. *Id.*

166. B&Q, *Social Responsibility: Product Disposal*, http://www.diy.com/diy/jsp/bq/templates/content_lookup.jsp?content=/aboutbandq/social_responsibility_2007/product_disposal.jsp&menu=aboutbanq (last visited Mar. 8, 2009).

167. B&Q, *Social Responsibility: Packaging*, http://www.diy.cov/diy/jsp/bq/templates/context_lookup.jsp?content=/aboutbandq/social_responsibility_2007/packaging.jsp&menu=aboutbandq (last visited Mar. 8, 2009).

168. For a list of B&Q suppliers in the United States, see <http://www.kellysearch.com/US-product-9596.html> (last visited Mar. 8, 2009).

a functioning environmental management system in place, Murray was subsequently able to provide tangible evidence to both B&Q and other potential overseas customers that its products and operations not only included sustainable commerce initiatives, but also met its customers' sustainable commerce objectives and targets.¹⁶⁹

U.S. corporations are now designing corporate sustainable commerce initiatives with extended product responsibility elements that embrace environmental impact metrics as a tool to evaluate and select vendors and suppliers—similar to the metrics required of U.S. corporations beginning in the 1990s by many of their European customers and competitors. Numerous well-known corporations—including Dell, L'Oreal, PepsiCo, Wal-Mart, Procter & Gamble, and Hewlett-Packard—have implemented sustainable commerce programs that monitor key environmental and operational information as part of vendor-approval programs.¹⁷⁰ Vendor environmental metrics established by U.S. purchasing organizations with extended product responsibility elements often measure not only the environmental impacts of candidate product suppliers but also evaluate the goals and objectives of vendor sustainable commerce programs. Purchasing organizations can then compare suppliers with their peer competitors and identify avenues to minimize the environmental impacts over a product's life cycle by identifying the impacts of each vendor from which they purchase goods and services. Global sustainable commerce agreements, such as the Kyoto Protocol, thus continue to interconnect U.S. manufacturers with their vendors, retailers, and customers to minimize environmental impacts in the absence of U.S. adoption of the Protocol or enactment of new federal sustainable commerce legislation.

V. HOW U.S. GOVERNMENT AND INDUSTRY CAN EMPLOY PUBLIC HEALTH LAW TO CONSTRUCT GLOBALLY- COMPETITIVE SUSTAINABLE COMMERCE: STANDARDS-BASED MANAGEMENT SYSTEMS WITH THIRD-PARTY VERIFICATION AND REPORTING

The case studies detailed in this Article provide evidence that sustainable commerce, driven by existing environmental and public health law, is now becoming a vital element of U.S. government and industry operations at both the state and local level. This Article further provides evidence that state and local governments, partnered with private industry in public and private agreements, are now active incubators for new sustainable commerce

169. See Appel & Irvin, *supra* note 1, at 408.

170. Fiona Harvey, *Suppliers Pushed on their Green Credentials*, FINANCIAL TIMES, Jan. 20, 2008.

initiatives which can fuel the next generation of U.S. economic growth, in the same way semiconductor technology and biotechnology fueled generations of growth within the U.S. economy during the 1980s and 1990s. And as sustainable commerce impacts the creation, design, development, manufacture, transportation, sale, and disposal of a greater percentage of U.S. consumer and industrial goods, the case studies outlined here portend that the U.S. can assume the global leadership position in sustainable commerce comparable to the U.S. leadership position in the semiconductor and biotechnology industries into the 21st century.

The question remains, however, as to how local/state government and industry leaders can effectively execute sustainable commerce initiatives which address the many different economic, public health and environmental impacts in their region. Recently, this same issue has been addressed by the health care industry in response to widely-reported noncompliance with state and federal regulatory law.

In the 1990s, inaccurate billing practices by physicians and hospitals along with non-conformance with requirements for federal health care programs prompted Congress to enact legislation which greatly diminished the knowledge requirement necessary for federal prosecutors to prevail in civil and criminal lawsuits against both medical professionals and administrators.¹⁷¹ The court of public opinion quickly attributed blameworthiness for billions of dollars in reported medical billing abuses to many in the health care community who had in fact been good stewards of private and public health care funding programs.¹⁷² In response, the health care community voluntarily developed, adopted and implemented a private assurance solution to the problem built on an existing management-based regulatory model, the ISO9000 quality management system standard, to ensure health care facilities fulfilled all applicable federal health care billing requirements and properly documented all billing invoices to private and public insurance programs.¹⁷³

Experts on health care financial compliance had reached a consensus that prevention of billing errors required not just a response to specific individual problems, but rather development of management systems responsive to the needs of government, insurance, and patient stakeholders which included all operational aspects of health care providers.¹⁷⁴ The consensus concluded existing health care billing management systems only focused on identifying

171. *See generally* BRYCE E. CARSON, *ISO9001:2000: A NEW PARADIGM FOR HEALTHCARE* (2003).

172. *See generally* JOHN W. SCHILLING, *UNDERCOVER: HOW I WENT FROM COMPANY MAN TO FBI SPY—AND EXPOSED THE WORST HEALTHCARE FRAUD IN US HISTORY* (2008).

173. *See generally* REBECCA S. BUSCH, *HEALTHCARE FRAUD, WASTE, ABUSE, AND SAFE HARBORS* (2007).

174. *See* BRETT E. TRUSKO ET AL., *IMPROVING HEALTHCARE QUALITY AND COST WITH SIX SIGMA* (2007).

and correcting particular, self-selected billing and reporting errors. Within the context of management system-based regulation, health care experts concluded more systems-oriented models would ensure that the legal, financial, and policy concerns of all stakeholders could be met employing established ISO 9000-based quality management system.

The International Organization for Standardization that created the ISO 9000 series is an internationally recognized entity that has overseen development of quality standards touching all activities in an organization that impact quality policies, objectives and responsibilities, quality-related planning, internal controls, and quality assurance.¹⁷⁵ These quality standards establish consistent quality practices within all operational levels that require organizations to implement quality systems-based organizational policies, processes, and procedures to meet the needs of their stakeholders. The standards are both advisory and procedural in nature. When an organization demonstrates compliance with ISO standards through internal, second-party or third-party reviews, the organization's quality system, not the entire entity, can provide documented objective evidence to internal and external stakeholders that it has met all of its legal and procedural obligations.¹⁷⁶ If deficits in the quality system are found, all stakeholders then can provide input on how to best address these deficiencies in line with the communal goals and objectives among all stakeholders.¹⁷⁷

The concept of quality manifest in the ISO 9000 standards focuses on four broad areas: generating outputs that meet stakeholder specifications, creating quality systems consistently implemented and verified, ongoing monitoring of quality systems, and efforts directed toward continuous quality improvement.¹⁷⁸ The standard is founded on eight well-accepted quality management principles common to all product or service-rendering organizations:

- stakeholder focus,
- leadership,
- involvement of all organizational personnel,
- process approach,
- systems approach to management,
- continual improvement,

175. See generally KEVIN R. GRIMES, ISO9001:2000. A PRACTICAL QUALITY MANUAL EXPLAINED (2002).

176. See generally Margaret M. Blair, Cynthia A. Williams, & Li-Wei, *The New Role for Assurance Services in Global Commerce*, 33 J. CORP. L. 325 (2008).

177. See CARSON, *supra* note 171.

178. *Id.*

- factual approach to decision making, and
- positive relationships with all inputs to the organization (suppliers, manpower, etc.).

The ISO 9000 process requires all systems and procedures be documented for every organizational activity that has direct or indirect impacts on quality in areas affecting performance and stakeholder satisfaction.¹⁷⁹ ISO 9000 standards require creation of quality measures which cover both internal process and outcome matters, as well as external considerations such as regulatory compliance, within each documented operational area which affects products and service quality. ISO 9000 processes involve all organizational employees in planning and implementation of the quality management system; success in making quality systems work within a given organization requires all personnel know and understand all relevant policies and procedures though which they affect the organization's product and services.

Adoption of the ISO 9000 standards within the health care community in the 1990s provided a mechanism of private regulation for health care facilities of all sizes which allowed these facilities to structure their own approaches to ensure quality products and services and integrate disparate quality-related processes and stakeholder needs into a single managerial framework.¹⁸⁰ While ISO allows for autonomy in program design and implementation, an organization must meet broad requirements applicable to its industry as established by its stakeholders; thus, organization such as hospitals and medical clinics must consider what the ISO standards require and correlate the standard's elements with the particular business, operational, legal, and regulatory objectives set by relevant stakeholders.¹⁸¹ In assessing various options and approaches to quality, the ISO process requires organizations analyze how particular hospital processes or procedures enhance overall quality. In this way, ISO 9000 provides the most open-ended, applied form of management-based regulation from which to fashion private assurance systems which demonstrate and ensure conformance to legal, regulatory and other stakeholder obligations.

Another example of business entities creating a private assurance system to ensure compliance with state and federal regulatory requirements in response to well known failures was implementation of ISO 9000-based management systems among U.S. corporations to ensure conformance with

179. *Id.*

180. *Id.*

181. *See generally* GRIMES *supra* note 175.

Sarbanes-Oxley requirements.¹⁸² Sarbanes-Oxley (SOX) requirements, enacted in the wake of Enron-type financial reporting scandals, require top management of publicly traded companies to review and analyze their organization's financial reports to ensure conformance with industry-standard reporting and risk management practices.¹⁸³ Management must state whether any material weaknesses exist in their firm's financial reports which might compromise governmental and third-party reliance on their publicly-reported financial statements. For example, SOX Section 404 specifically imposes internal controls and procedures on public organizations regarding their public financial reporting obligations; SOX Section 302 requires corporate compliance reports include information of a non-financial nature that would "provide investors with a materially accurate and complete picture" of the operation.¹⁸⁴

Much as health care organizations adopted ISO 9000-based management systems to ensure conformance with private and public billing obligations, public corporations have embraced and implemented ISO 9000-based management systems to ensure compliance with SOX elements.¹⁸⁵ SOX-directed management systems typically include procedures, document and record systems mandated in SOX requirements meet industry standards; these include control environment, risk assessment, process control, information/communications and monitoring. Meeting these five SOX elements provides assurance that internal corporate reporting procedures are in place which in turn ensure management publicly reports credible financial and operational data. Ongoing SOX operational audits can ensure corporate stakeholders, including corporate rating agencies as well as government regulatory agencies, receive timely and accurate corporate financial reports and verifiable risk assessments because all reports and assessments comply with industry-accepted reporting practices.¹⁸⁶ For large corporations, ISO9000-based SOX compliance programs can create ongoing, verifiable corporate finance reports from each corporate division and operational center—including outsourced business activities. Given the serious penalties which can attach to both corporations and corporate management who do not satisfy SOX regulatory

182. Sarbanes-Oxley Act of 2002, Pub. L. No. 107-204, 116 Stat. 745 (2002) (codified in scattered sections of 11, 15, 18, 28, and 29 U.S.C. Sarbanes-Oxley Act of 2002 ... scattered sections ... and 29 U.S.C.). See generally WILLIAM A. STIMSON, *ISO9001 AND SARBANES-OXLEY: A SYSTEM OF GOVERNANCE* (2006).

183. See John Paul Lucci, *Enron—The Bankruptcy Heard Around the World and the International Ricochet of Sarbanes-Oxley*, 67 ALB. L. REV. 211, 214 (2003).

184. 15 U.S.C. §§ 7241, 7262 (2006).

185. See STIMSON, *supra* note 182.

186. *Id.*

elements, corporate management have embraced ISO9000-based management systems, including organizational policies, procedures, reporting requirements, and document management systems, to ensure their firms can demonstrate, by objective evidence, they fulfill all applicable SOX reporting requires.

In actively growing areas of the US, local/state government and industry leaders will face a multi-layered planning effort to effectively execute sustainable commerce initiatives which address the many different economic, public health and environmental impacts in their region. These sustainable commerce initiatives will need to address a number of issues including:

- address short term and long term sustainable commerce goals/objectives;
- address local and global stakeholder groups for both government and industry;
- respond quickly to changes in the global marketplace—including global financial market requirements;
- respond quickly to dramatic changes in the local economic growth;
- address ongoing changes to regulatory requirements governing financial, environmental, and public health metrics not only at the local and state level but also at the federal and possibly international level;
- provide mechanisms to shift financial and manpower resources within either government or industry to newly-identified sustainable commerce objectives in a short time frame.

ISO-based management systems, as described above for the Murray Corporation, provide a valuable starting point to guide local and state government and industry organizations on how to coordinately get their hands around what may seem to be a multi-faceted, multi-component programs like sustainable commerce initiatives and craft initiatives which position locales and states to benefit from the global growth in sustainable commerce in the coming years. And these same ISO-based management systems provide tools to towns like Ringgold as they develop sustainable commerce initiatives to link revenue-generating programs with public health and environmental infrastructure projects for both industry and government to ensure the programmatic and financial success of sustainable commerce initiatives in the years to come.

