

# EXPEDITING INNOVATION

Sarah Tran\*

*Private incentives to innovate and commercialize many technologies are often inadequate in terms of their social benefits. With America's economic leadership position at risk of slipping, it becomes increasingly important to consider what measures public entities can take to promote the innovation and commercialization of those technologies that are essential to American welfare. The U.S. Patent and Trademark Office ("PTO" or "Patent Office") has the potential to reduce the divergence between social needs and private incentives for technological progress. By expediting the review of more socially valuable patent applications, the PTO could respond to critical public needs and better satisfy the constitutional justification for the existence of the patent system. The PTO's recent implementation of a program that purports to fast track the review of applications pertaining to environmentally beneficial technologies provides a useful, albeit imperfect, model for such beneficial reform.*

*This Article brings key insights to a variety of weighty issues including: the proper role of the Patent Office and other regulatory bodies in promoting the innovation and commercialization of high-priority technologies; the appropriate measurement of the "value" of technological progress; the interrelationship between the Constitution and the patent review process; and the relevance of fairness and economic objections to the grant of preferential treatment in a monopoly system.*

<i>Introduction</i> .....	124
<i>I. Justification: Aid for a Special Needs Industry</i> .....	129
<i>A. Over-Dependence on Foreign Energy Sources</i> .....	129
<i>B. Climate Change</i> .....	131
<i>C. Heated Race</i> .....	133
<i>II. A Socially Irresponsible System</i> .....	137
<i>A. Accelerated Examination</i> .....	138
<i>B. Green Technology Pilot Program</i> .....	143
<i>III. Optimizing the Patent Bargain</i> .....	147
<i>A. Deficiencies in the Green Model</i> .....	148
1. <i>Barriers to Participation</i> .....	149
2. <i>Barriers to Innovation</i> .....	152
<i>B. Objections</i> .....	154
1. <i>Definitional</i> .....	154
2. <i>Fairness</i> .....	159
<i>IV. Lessons Learned</i> .....	162
<i>Conclusion</i> .....	164

---

\* Assistant Professor of Law, Southern Methodist University School of Law. With thanks to Judge Dyk and my former Federal Circuit co-clerks for their inspiration; Pinchus Laufer, Manjunath Rao, and Joni Chang at the United States Patent and Trademark Office and Victor Cardona at Heslin Rothenberg Farley & Mesiti P.C. for their insights; Eric Lane, Lisa Larimore Ouellette, and Michael Tschupp for critiquing an early draft of my Article on their patent law blogs; Marc Steinberg, Lisa Heinzerling, Anthony Colangelo, Meghan Ryan, Jessica Weaver, Jeff Kahn, Beth Laughton, T.J. Chiang, Keith Robinson, and the participants at the Vermont Law School Colloquium on Environmental Scholarship for their helpful comments; Randall Beane for his research assistance; the Barbara and Michael Lynn Foundation for its generous financial support; and the staff of the Harvard Environmental Law Review for their excellent edits. Finally, I dedicate this Article to Thuan, FarrahSophia, Jimi, and Nanny for their tireless support.

## INTRODUCTION

Over one hundred years ago, technological innovation helped the United States rise to dominate the global economy, a position it has maintained since that time.<sup>1</sup> Technological advances by other nations now threaten to oust the United States from its privileged position.<sup>2</sup> Because market forces have produced a sub-optimal level of innovation and commercialization of key technologies in the United States, additional incentives are necessary to narrow the gap between the private incentives to research and develop these technologies and their social benefits.<sup>3</sup> With this nation's economic leadership position at risk of slipping,<sup>4</sup> the issue of what measures public entities can take to promote the innovation and commercialization of those technologies that are essential to American competitiveness is increasingly important.

Urgent times can justify urgent measures.<sup>5</sup> In an emergency room at a hospital, a patient who has had a heart attack and has but minutes to live will receive medical attention before a patient who has a less time-sensitive need for care. Such preferential treatment is justified, even though the treatment of all other patients may be delayed, by the urgent nature of a heart attack. In recognition of the urgency for technological progress in certain areas, the emergency room model permeates countless areas of the law where regulators have institutionalized deviations from their procedures to prioritize the

---

<sup>1</sup> See Ajay K. Mehrotra, *American Economic Development, Managerial Corporate Capitalism, and the Institutional Foundations of the Modern Income Tax*, 73 LAW & CONTEMP. PROBS. 25, 33 (2010) ("Economic growth and development, driven by an abundance of natural resources, technological innovation, and increasing factor inputs and productivity, helped transform [the United States'] agriculturally based, seaboard economy into the world's leading industrial, capitalist economy by the second decade of the twentieth century."); Hon. Dana Rohrabacher, *Pennies for Thoughts: How GATT Fast Track Harms American Patent Applicants*, 11 ST. JOHN'S J. LEGAL COMMENT. 491, 492 (1996) ("The United States is successful because it has maintained a technological lead on the world. It is technology and knowledge that have given us the competitive edge throughout our Nation's history.").

<sup>2</sup> See President Barack Obama, State of the Union Address (Jan. 25, 2011), in 157 CONG. REC. H457-62 (daily ed. Jan. 25, 2011) (discussing how nations like China and India are posing competitive threats to the United States due to their efforts to invest in research and new technologies, particularly green technologies). Newspapers are filled with stories of the United States' inability to keep pace with other countries in clean energy development. See, e.g., Bryan Walsh, *Clean Energy: U.S. Lags in Research and Development*, TIME, Aug. 1, 2009, available at <http://www.time.com/time/health/article/0,8599,1913781,00.html#ixzz0k6UOr2Xa>; Steve Monfort, *U.S. Lags in Clean Tech Investment*, NASDAQ.COM, Feb. 19, 2011, <http://www.nasdaq.com/newscontent/20100326/U.S.-lags-in-clean-tech-investment.aspx>; see also Rob Atkinson, *America Risks Missing Out in Clean Technology*, BUS. WEEK, Feb. 3, 2010, [http://www.businessweek.com/innovate/content/jan2010/id20100122\\_369263.htm](http://www.businessweek.com/innovate/content/jan2010/id20100122_369263.htm) ("[B]etween 2009 and 2013, the governments of [China, Japan, and South Korea] will out-invest the U.S. three-to-one in these sectors, or \$ 509 billion to \$ 172 billion.").

<sup>3</sup> See *infra* Part II.A.

<sup>4</sup> Obama, *supra* note 2 (discussing how the United States is at risk of losing its lead).

<sup>5</sup> This is not to suggest that all deviations from procedure are justified. Consideration must always be given to the legal and practical implications that a deviation from procedure will produce.

development of technologies of national importance.<sup>6</sup> The U.S. Food and Drug Administration, for instance, has expedited its review process for drugs that treat serious diseases for almost two decades.<sup>7</sup>

The U.S. Patent and Trademark Office (“PTO” or “Patent Office”), an agency charged with examining patent applications and issuing patents for new inventions,<sup>8</sup> is well poised to create additional incentives for the innovation and commercialization of socially valuable technologies by prioritizing these key technologies in its review process.<sup>9</sup> Yet surprisingly, it has not subscribed to the emergency room model.<sup>10</sup> Rather, patent examiners at the PTO generally review new patent applications in the order of their U.S. filing date.<sup>11</sup> The PTO adheres to this system despite the fact that it has a backlog of patent applications that requires inventors to wait almost three years on average to receive a patent.<sup>12</sup> These delays in the patent review process make it difficult for inventors to obtain early financing for their inventions and render patent rights uncertain while the applications are pending. For technologies that are critically needed to further national interests, such as those relating to “biomedical research, information technology, and . . . clean energy,”<sup>13</sup> the backlog can cause substantial harm to public interests.<sup>14</sup> For instance, in the clean energy context the backlog has delayed the review process for patent applications pertaining to the ten-watt Philips Electronic LED light bulb, a light bulb that emits the equivalent of a sixty-watt light bulb and lasts twenty-five times as long; the smart thermostat, which reduces residential consumption of energy by telling homeowners

---

<sup>6</sup> See, e.g., Press Release, Fed. Energy Regulatory Comm’n, FERC Issues First License for Hydrokinetic Energy Project (Dec. 20, 2007), available at <http://www.ferc.gov/media/news-releases/2007/2007-4/12-20-07-H-1.asp> (creating a short-term, conditioned licensing process for wave, tidal, and ocean current projects to give the hydrokinetic industry, a nascent renewable energy industry, a boost).

<sup>7</sup> See *Fast Track, Accelerated Approval and Priority Review*, U.S. FOOD & DRUG ADMIN., <http://www.fda.gov/forconsumers/byaudience/forpatientadvocates/speedingaccessstoimportantnewtherapies/ucm128291.htm> (last visited Jan. 5, 2012) (on file with the Harvard Law School Library).

<sup>8</sup> 35 U.S.C. § 2(a) (2006).

<sup>9</sup> The Patent Office possesses the specific powers to establish regulations that “facilitate and expedite the processing of patent applications.” 35 U.S.C. § 2(b)(2)(C) (emphasis added).

<sup>10</sup> This has not always been the case. See *infra* Part II.A.

<sup>11</sup> See MANUAL OF PATENT EXAMINING PROCEDURE § 708 (8th ed. 2001) (Rev. 7, July 2008) [hereinafter MPEP] (“Nonprovisional applications shall be taken up for examination . . . in the order in which they have been filed except . . . pursuant to 37 CFR 1.102.”).

<sup>12</sup> Under the Patent Office’s current system of reviewing applications on a first-come, first-served basis, the average time from the filing of an application to patent issuance or abandonment was 34.6 months in fiscal year 2009 and was projected to be 34.8 months in fiscal year 2010. See PTO, 2010-2015 STRATEGIC PLAN 10 (2010), available at [http://www.uspto.gov/about/stratplan/USPTO\\_2010-2015\\_Strategic\\_Plan.pdf](http://www.uspto.gov/about/stratplan/USPTO_2010-2015_Strategic_Plan.pdf).

<sup>13</sup> See Obama, *supra* note 2, at H458.

<sup>14</sup> The delayed review of patent applications pertaining to renewable energy technologies that could potentially reduce the United States’ reliance on foreign energy sources, curb greenhouse gas emissions, and help the United States compete in the international race to dominate the renewable energy industry means that irreversible damage to the environment, as well as to the United States’ national security interests and international competitiveness, is occurring as a direct result of the lag time at the PTO. See *infra* Part II.A.

how much energy their homes are using and at what cost; Dow Chemical's Solar Shingle, a roof shingle that also functions as a solar panel; Enerxia Building System's method of building homes and offices without using fuel or electricity; thin film batteries that more efficiently power electronic devices; and the EPA's hydraulic hybrid power-train system, which has reduced the pollution and increased the efficiency of mail delivery trucks.<sup>15</sup> By lessening the value of the rewards of innovation for these key technologies to both individual inventors and the public, the backlog also disrupts the constitutional patent bargain supporting the very existence of the patent system: the grant of a patent to an inventor in exchange for the benefit to society of the promotion of "the Progress of Science and useful Arts."<sup>16</sup> Commentators have suggested a range of proposals to combat the backlog problem.<sup>17</sup> Yet insignificant analytical attention has been directed to the PTO's systemic failure to expedite the processing of socially valuable applications, which are most likely to help satisfy national priorities if patented more quickly.<sup>18</sup>

The PTO itself has acknowledged that extenuating circumstances justify the accelerated review of certain categories of patents with greater social

<sup>15</sup> See generally David Kappos, Dir., PTO, Remarks at Press Conference Announcing Pilot to Accelerate Green Technology Applications (Dec. 7, 2009) [hereinafter Remarks], available at <http://www.uspto.gov/news/speeches/2009/2009nov07.jsp> (describing various environmentally beneficial inventions).

<sup>16</sup> U.S. CONST. art. I, § 8, cl. 8.

<sup>17</sup> See Robert D. Atkinson & Daniel D. Castro, *A National Technology Agenda for the New Administration*, 11 YALE J.L. & TECH. 190, 192–94 (2009) (arguing that Congress should "grant the PTO regulatory authority to increase its fees to meet its budgetary needs"); David P. Irimies, *Why the USPTO Should Adopt a Deferred Patent Examination System*, 20 DEPAUL J. ART TECH. & INTELL. PROP. L. 355, 357–61 (2010) (arguing that the PTO should use a deferred patent examination system for all non-provisional U.S. patent applications); Arti K. Rai, *Growing Pains in the Administrative State: The Patent Office's Troubled Quest for Managerial Control*, 157 U. PA. L. REV. 2051, 2077–80 (2009) (advocating changes to the PTO's fee-setting authority, more liberal judicial interpretation of the PTO's authority to manage its caseload, and changes to the inequitable-conduct doctrine); see generally Alisa S. Kao, *Peer Review of Patents: Can the Public Make the Patent System Better?*, 7 U. ILL. J.L. TECH. & POL'Y 395, 402 (2007) (discussing the potential of peer review to improve the patent system). Even the PTO itself has thrown its efforts behind sweeping reform proposals. See ARTI RAI, STUART GRAHAM, & MARK DOMS, U.S. DEPT OF COMMERCE, PATENT REFORM: UNLEASHING INNOVATION, PROMOTING ECONOMIC GROWTH & PRODUCING HIGH-PAYING JOBS 1 (2010), available at [http://www.commerce.gov/sites/default/files/documents/migrated/Patent\\_Reform-paper.pdf](http://www.commerce.gov/sites/default/files/documents/migrated/Patent_Reform-paper.pdf) (arguing that patent reform legislation will accelerate "the pace of growth and of job creation" and "will be a powerful and deficit-neutral mechanism for expanding America's ability to innovate").

<sup>18</sup> Several commentators have recognized that the most "valuable" patents deserve the greatest amount of attention. See, e.g., Chris J. Katopis, *Perfect Happiness?: Game Theory as a Tool for Enhancing Patent Quality*, 10 YALE J.L. & TECH. 360, 360–61 (2008) (suggesting that the PTO only review valuable applications that are selected using game theory); Mark A. Lemley, *Rational Ignorance at the Patent Office*, 95 NW. U. L. REV. 1495, 1531 (2001) (arguing that the "PTO is rationally ignorant of the objective validity of the patents it examines" because such "decisions can be made much more efficiently in litigation"). However, these commentators have viewed "value" from the economic perspective of patent owners, rather than from the social perspective of the nation as a whole. Inventions that enhance a person's libido could be extraordinarily lucrative and thus "valuable" to patent owners but have little relevance to the United States' top priorities as a nation.

potential but has done little to expedite the review of such applications. For example, the PTO recently initiated the Green Technology Pilot Program, a program that purports to accelerate the processing of applications on environmentally beneficial inventions, and has suggested that it may expand this program to expedite the review of other inventions of great social value.<sup>19</sup> However, unlike the PTO's sister patent offices abroad that are also prioritizing green technologies,<sup>20</sup> the PTO has (counterintuitively) limited eligibility in the Green Technology Pilot Program to technologies that have already been invented, while providing only nominal benefits to inventors who avail themselves of the program.<sup>21</sup> As a result, the Green Technology Pilot Program has been notably undersubscribed and ineffective as a catalyst for the innovation of much-needed green technology.<sup>22</sup> In essence, the PTO's program looks "green" without actually being "green." My thesis is that the PTO should reduce the obstacles that prevent applications involving beneficial green technologies from being expedited and select more categories of high-priority technologies for accelerated review. My proposal gains momentum from recent legislative reform. On September 8, 2011, Congress passed the America Invents Act, which stipulates that the PTO may prioritize the examination of applications of importance to the national economy or national competitiveness.<sup>23</sup> By reviewing more types of patent applica-

---

<sup>19</sup> See Pilot Program for Green Technologies Including Greenhouse Gas Reduction, 74 Fed. Reg. 64,666, 64,667 (Dec. 8, 2009); David Kappos, Dir., PTO, Public Meeting on Enhanced Examination Timing Control Initiative 9 (July 20, 2010), available at [http://www.uspto.gov/patents/announce/3-track\\_meeting\\_transcript.pdf](http://www.uspto.gov/patents/announce/3-track_meeting_transcript.pdf) ("[W]e're already experimenting with various ways of enabling applicants to receive accelerated review of technologies in areas that are priorities to the Obama administration like green technology . . . and we'll be considering accelerated review in other categories of innovation that are also vital to our national interests.").

<sup>20</sup> See generally Press Release, Korean Intellectual Prop. Office, Thanks to Superspeed Examination, Green Technology Acquires Patent in a Month (Oct. 20, 2009), available at [http://www.kipo.go.kr/kpo/user.tdf?seq=1305&c=1003&a=user.english.board.BoardApp&board\\_id=kiponews&catmenu=ek20200](http://www.kipo.go.kr/kpo/user.tdf?seq=1305&c=1003&a=user.english.board.BoardApp&board_id=kiponews&catmenu=ek20200); Press Release, Richard Marles, Austl. Parliamentary Sec'y for Innovation & Indus., Fast Tracking Patents for Green Technology Solutions (Sept. 15, 2009), available at [archive.innovation.gov.au/ministerarchive2010/Marles/Pages/FAST-TRACKINGPATENTSFORGREENTECHNOLOGYSOLUTIONS.html](http://archive.innovation.gov.au/ministerarchive2010/Marles/Pages/FAST-TRACKINGPATENTSFORGREENTECHNOLOGYSOLUTIONS.html); Press Release, U.K. Intellectual Prop. Office, Green Patent Database Launched (June 4, 2010), available at <http://www.ipo.gov.uk/about/press/press-release/press-release-2010/press-release-20100604.htm>; Green Channel Patent Applications Data, U.K. INTELLECTUAL PROP. OFFICE, <http://www.ipo.gov.uk/types/patent/p-os/p-gcp/p-gcp-help.htm> (last visited Jan. 5, 2012) (on file with the Harvard Law School Library); *The JPO Implemented a Pilot Program for Green Accelerated Examination Effective November 1, 2009*, ONDA TECHNO INTL. PATENT ATTYS (Nov. 30, 2009), <http://www.ondatechno.com/English/ip/patent/report/20091130.html>; see also Press Release, Can. Intellectual Prop. Office, Expedited Examination of Patent Applications Related to Green Technology (Oct. 5, 2010), available at <http://www.cipo.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/wr02930.html>; *Green Technologies Given Special Treatment in the United States, United Kingdom, and South Korea*, NUTTER MCCLENNEN & FISH LLP (May 17, 2010), [http://www.nutter.com/publications\\_events.php?section=13&ReportID=1037](http://www.nutter.com/publications_events.php?section=13&ReportID=1037).

<sup>21</sup> See *infra* Part III.B.

<sup>22</sup> See *infra* Part III.B.

<sup>23</sup> Leahy-Smith America Invents Act, Pub. L. No. 112-29, § 25, 125 Stat. 284, 337-38 (2011) [hereinafter America Invents Act] (to be codified at 35 U.S.C. § 2) (providing that the PTO, "subject to any conditions prescribed by the Director [of the PTO] and at the request of

tions at a rate proportional to their social values, the PTO could fulfill this congressional directive while responding to critical public needs.<sup>24</sup>

At first glance, my proposal conflicts with popular conceptions of fairness, which presume that individual inventors or investors should pay a fee or do a portion of the Patent Office's work as a quid pro quo for receiving fast-tracked review.<sup>25</sup> Requiring such a quid pro quo makes sense when all applications receive the same opportunities for expedited review. But when select categories of inventions are expedited on the basis of their ability to satisfy national priorities, the quid pro quo upsets the balance of the constitutional patent bargain by over-burdening the parties most likely to promote "the Progress of Science and useful Arts"<sup>26</sup> and by ignoring the availability of mechanisms to accommodate applicants who experience delayed processing periods. Thus, concerns about unfairness effectively dematerialize when the focus is on socially valuable technologies.

The remainder of this Article elaborates upon these arguments. Part I shows, through a focused study of renewable energy technologies, how prioritizing socially valuable applications is normatively justifiable as a measure to close the gap between the immense social benefits that these technologies bring and the private incentives to innovate and commercialize them. Part II describes how the mounting backlog of unprocessed applications at the Patent Office obstructs the innovation and commercialization of technologies that are urgently needed to serve national interests. It further explains how the Patent Office fails to provide meaningful opportunities for expedited review to inventors of socially valuable technologies. Part III discusses how the PTO can better optimize the patent bargain underlying the very existence of the patent system by using the Green Technology Pilot Program as a model for prioritizing the review of high-priority patent applications. It then identifies the deficiencies in the Green Technology Pilot Program that have hindered its constructive value as a model for expansion and highlights the fact that programs initiated by foreign patent offices have

---

the patent applicant," may "provide for prioritization of examination of applications for products, processes, or technologies that are important to the national economy or national competitiveness without recovering the aggregate extra cost of providing such prioritization, notwithstanding section 41 or any other provision of law").

<sup>24</sup> The PTO's ability to initiate socially valuable programs is not unrestricted, however. Unlike most administrative agencies, which have broad flexibility to craft measures that further their missions, the PTO has lacked the authority to promulgate substantive rules under judicial precedent. See Sarah Tran, *Administrative Laws, Patents, and Distorted Rules*, 80 Geo. Wash. L. Rev. (forthcoming 2012) (arguing that the substantive restriction on the PTO's rulemaking authority has hampered the agency's ability to remedy the patent system's deficiencies and has conflicted with the Patent Act, the Constitution, and Supreme Court precedent). The America Invents Act provides the PTO with new powers and responsibilities that may require the courts to acknowledge that the agency possesses substantive and policymaking authority. Further discussion of these developments is beyond the scope of this Article, but I intend to address them in the near future.

<sup>25</sup> See *infra* Part III.B.2.

<sup>26</sup> U.S. CONST. art. I, § 8, cl. 8 (granting Congress the power "[t]o promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries").

not been plagued by these deficiencies. Part III further considers the theoretical objections to any efforts to treat socially valuable patent applications preferentially and poses suggestions for overcoming these objections. Next, Part IV presents essential lessons learned from the Green Technology Pilot Program that can aid the PTO in reforming its socially irresponsible system of reviewing patent applications. Finally, this Article concludes that by expanding the opportunities for applications pertaining to high-priority inventions to be processed through the patent system, the PTO can keep pace with the incentives provided by its sister agencies abroad and further national priorities.

## I. JUSTIFICATION: AID FOR A SPECIAL NEEDS INDUSTRY

Although all industries to one degree or another can benefit from government stimuli, only a few industries require urgent regulatory action to maximize social welfare. These are the industries where there is a gap between the private incentives to innovate and develop certain technologies and the social needs for the new technologies to help satisfy national priorities within a set timeframe. The green industry falls definitively within this category as three interrelated factors are creating a pressing need for government stimuli to aid this industry: (1) America's over-dependence on foreign energy sources; (2) global climate change concerns; and (3) an international race to dominate the renewable energy industry.

### A. *Over-Dependence on Foreign Energy Sources*

The United States has serious energy troubles. Its addiction to foreign energy sources threatens national security and renders its energy consumption practices unsustainable.<sup>27</sup> These problems push the nation to find alternatives.

The United States is a net energy importer and has been since the late 1950s.<sup>28</sup> The energy crises of the 1970s highlighted the fact that America's over-reliance on foreign fuel supplies made it vulnerable to the whims of the supplying countries but did little to lessen its dependence on them.<sup>29</sup> In fact, since the crises, America has become more and more acutely dependent on energy imports — particularly oil imports.<sup>30</sup> The United States' energy con-

---

<sup>27</sup> While other national issues, such as health care reform, trigger inter-party disputes, concerns about energy independence motivate bipartisan partnership. See Bill Murray, *Obama, Republicans Seek Common Ground on Energy*, OIL DAILY, Nov. 8, 2010 ("Democratic and Republican leaders have said they will make an effort to find common ground over energy issues in the wake of the Nov. 2 [2010] election in which the Republicans gained a majority in the US House of Representatives.").

<sup>28</sup> FRED BOSSELMAN ET AL., ENERGY, ECONOMICS AND THE ENVIRONMENT 8 (3d ed. 2010).

<sup>29</sup> *Id.* at 7–9.

<sup>30</sup> *Id.* Though the United States' recent boom in shale gas production has led to a surge in drilling for natural gas, economic and environmental factors have inhibited its ability to re-

sumption is now approximately one hundred quadrillion British thermal units per year.<sup>31</sup> On a per capita basis, this far exceeds the consumption by other countries:

With only five percent of the world's population, the United States is responsible for about twenty-five percent of the world's annual energy consumption. Americans use twice as much energy as their European counterparts, almost seven times as much as the Chinese, and more than twenty-one times that of Africans. No one seriously argues that the rest of the world can safely consume energy at the same per capita level currently consumed by Americans.<sup>32</sup>

Fossil fuels, particularly oil, currently constitute the largest source of energy used in the United States.<sup>33</sup> The unsustainable nature of oil has prompted energy experts to try to predict when global oil supplies would peak because, after the peak occurs, the price of oil can be expected to rise. Though estimates have varied as to when global oil supplies would peak,<sup>34</sup> the authoritative International Energy Agency stunned the world in November of 2010 with its announcement that the peak had already occurred in 2006.<sup>35</sup> If this announcement is correct, memories of cheap oil will fade into history.

When oil supplies diminish, demands for energy likely will not. Fast-paced economic gains by developing countries are driving a surge in the global demand for energy.<sup>36</sup> The U.S. Energy Information Administration has estimated that economic activity in countries outside the Organization

---

place oil. *See generally id.* at 1–25. Overcoming these issues through technological advances would create a positive solution for America's energy needs.

<sup>31</sup> *Id.* at 8.

<sup>32</sup> John C. Dembach, *Harnessing Individual Behavior to Address Climate Change: Options for Congress*, 26 VA. ENVTL. L.J. 107, 119–20 (2008).

<sup>33</sup> *See* BOSSELMAN ET AL., *supra* note 28, at 7.

<sup>34</sup> *See, e.g.*, Jacqueline L. Weaver, *The Traditional Petroleum-Based Economy: An "Eventful" Future*, 36 CUMB. L. REV. 505, 511–12 (2005–06); Jeffrey Ball, *As Prices Soar, Doom-sayers Provoke Debate on Oil's Future*, WALL ST. J., Sept. 21, 2004, at A1; Lynn J. Cook, *No Consensus on Future of Oil*, HOUS. CHRON., June 23, 2005, at D1; Matt Crenson, *Experts Ponder Oil's Peak*, HOUS. CHRON., May 29, 2005, <http://www.chron.com/business/energy/article/May-29-2005-Experts-ponder-oil-s-peak-1937733.php>. In 2004, the U.S. Geological Service provided the most optimistic estimate of 2040 for the peak, but stated that the timing would depend on conservation efforts. *See* BOSSELMAN ET AL., *supra* note 28, at 370 (citing JOHN H. WOOD, GARY R. LONG, & DAVID F. MOREHOUSE, U.S. ENERGY INFO. ADMIN., LONG-TERM WORLD OIL SUPPLY SCENARIOS: THE FUTURE IS NEITHER AS BLEAK OR ROSY AS SOME ASSERT (2010), *available at* [http://www.eia.doe.gov/pub/oil\\_gas/petroleum/feature\\_articles/2004/worldoilsupply/pdf/itwos04.pdf](http://www.eia.doe.gov/pub/oil_gas/petroleum/feature_articles/2004/worldoilsupply/pdf/itwos04.pdf)).

<sup>35</sup> *See* INT'L ENERGY AGENCY, WORLD ENERGY OUTLOOK 2010 EXECUTIVE SUMMARY 6 (2010), *available at* [http://www.worldenergyoutlook.org/docs/weo2010/WEO2010\\_ES-English.pdf](http://www.worldenergyoutlook.org/docs/weo2010/WEO2010_ES-English.pdf) (indicating that conventional crude oil production peaked in 2006).

<sup>36</sup> Alex Kirby, *Energy: Meeting Soaring Demand*, BBC NEWS, Nov. 9, 2004, <http://news.bbc.co.uk/2/hi/science/nature/3995135.stm> (describing how developing countries are quickly surpassing developed countries in terms of energy demand for their industrial, residential, and commercial sectors).



for Economic Cooperation and Development (“OECD”)<sup>37</sup> will increase almost twice as much as in all OECD countries from 2008 to 2035.<sup>38</sup> With energy fueling this economic progress, demand for energy is anticipated to increase eighty-five percent in non-OECD regions, while energy demand in OECD regions is expected to increase eighteen percent. Overall, world-marketed energy consumption is estimated to increase fifty-three percent.<sup>39</sup> What these statistics signify is that unless America finds a solution to its energy needs soon, its energy troubles can only be expected to be exacerbated as competition for energy resources intensifies.

If energy independence and national security had concrete market values, they could signal energy developers in the United States to produce the optimum level of domestic energy. Unfortunately, while fossil fuels, like oil, carry clear market signals to consumers in terms of price, energy independence and national security do not. Energy independence and national security are positive externalities that result when America has the resources to supply its own energy needs. To capture these positive externalities, governmental stimuli are needed to encourage the innovation and development of potential alternatives to foreign energy sources.

### B. *Climate Change*

In addition to America’s insecure position as a net energy importer, climate change is becoming an increasingly pressing global problem. Climate change is now creating a time-critical need for the development of innovative renewable energy technologies.

An influential report by the Intergovernmental Panel on Climate Change has concluded that unless the international community soon commits to decrease greenhouse gas emissions substantially, global warming will very likely cause catastrophic damage during this century.<sup>40</sup> To avoid

---

<sup>37</sup> See U.S. ENERGY INFO. ADMIN., INTERNATIONAL ENERGY OUTLOOK 2011, at 1 (2011), available at [http://www.eia.gov/forecasts/ieo/pdf/0484\(2011\).pdf](http://www.eia.gov/forecasts/ieo/pdf/0484(2011).pdf). These statistics were based on the membership of the OECD on March 10, 2010. The OECD countries at that time consisted of the United States, Canada, Mexico, Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Poland, Portugal, Slovakia, Spain, Sweden, Switzerland, Turkey, the United Kingdom, Japan, South Korea, Australia, and New Zealand. Chile subsequently became a member on May 7, 2010, so its membership was not reflected in Outlook.

<sup>38</sup> See *id.* at 17, 19. The administration predicts an average of 4.6% annual growth in non-OECD countries, compared with an average of 2.1% annual growth for OECD countries. *Id.*

<sup>39</sup> *Id.* at 9. Though the recent economic downturn decreased the short-term demands for energy, with economic recovery, the demands for energy are anticipated to return to their former trajectories. *Id.*

<sup>40</sup> WORKING GROUPS I, II AND III, INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2007: SYNTHESIS REPORT (2008), available at [http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4\\_syr.pdf](http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr.pdf). A number of Republicans, however, remain skeptical of climate change. See Steve Hargreaves, *GOP Ready To Fight over Global Warming*, CNNMONEY.COM, Nov. 22, 2010, [http://money.cnn.com/2010/11/22/news/economy/epa\\_global\\_warming\\_republicans/index.htm](http://money.cnn.com/2010/11/22/news/economy/epa_global_warming_republicans/index.htm). Nonetheless, they support all forms of energy development, including renewable energy development. See *id.*

the most destructive weather and prevent costly sea-level rise, the International Energy Agency states that efforts must be taken to limit the temperature increase to about 2°C by stabilizing the greenhouse gas concentration at around 450 parts per million carbon dioxide equivalent.<sup>41</sup> To do so, global energy-related emissions of carbon dioxide would need to peak just before 2020 at 30.9 gigatonnes (“Gt”) and decline thereafter to 26.4 Gt by 2030.<sup>42</sup> A delay in reaching these milestones would exacerbate global climate change and increase the costs of resolving it.<sup>43</sup> Specifically, the Adviser to the UK Government on the Economics of Climate Change and Development has estimated that

if we don’t act, the overall costs and risks of climate change will be equivalent to losing at least 5% of global GDP each year, now and forever. If a wider range of risks and impacts is taken into account, the estimates of damage could rise to 20% of GDP or more.

In contrast, the costs of action — reducing greenhouse gas emissions to avoid the worst impacts of climate change — can be limited to 1% of global GDP each year.<sup>44</sup>

Technology is expected to be a vital tool for reducing the world’s carbon footprint.<sup>45</sup> The Pew Center on Climate Change claims that “seriously addressing global climate change will require a decades-long commitment to develop and deploy new, low-carbon technologies around the world.”<sup>46</sup> The concept of solving the global warming dilemma through a “technological revolution”<sup>47</sup> meshes well with the psychological attitudes of consumers. A 2010 study suggests that consumers are more likely to respond to new technologies than to make changes to their own behavior.<sup>48</sup> In other words, it is

<sup>41</sup> INTL. ENERGY AGENCY, WORLD ENERGY OUTLOOK 2009 FACT SHEET 4 (2009), available at [http://www.worldenergyoutlook.org/docs/weo2009/fact\\_sheets\\_WEO\\_2009.pdf](http://www.worldenergyoutlook.org/docs/weo2009/fact_sheets_WEO_2009.pdf).

<sup>42</sup> *Id.* at 5. To put these values into context, 28.8 Gt of carbon dioxide was emitted in 2007. *Id.*

<sup>43</sup> NICHOLAS STERN, THE ECONOMICS OF CLIMATE CHANGE: THE STERN REVIEW, at xiii (2007).

<sup>44</sup> *Id.* at xv.

<sup>45</sup> The Pew Center on Climate Change’s 2006 “Agenda for Global Action” has listed “science and technology” at the top of its list of six key areas on which to concentrate. *Executive Summary: Agenda for Climate Action*, PEWCLIMATE.ORG, available at [http://www.pewclimate.org/global-warming-in-depth/all\\_reports/agenda\\_for\\_climate\\_action/executive\\_summary.cfm](http://www.pewclimate.org/global-warming-in-depth/all_reports/agenda_for_climate_action/executive_summary.cfm). The report further gave fifteen recommendations requiring immediate implementation. *Id.* At least five of these recommendations targeted stimulating research and development of technology that could combat climate change. *See id.* Six other recommendations called for increased funding and incentives for the innovation and development of a more efficient energy system. *Id.*

<sup>46</sup> PEW CTR. ON GLOBAL CLIMATE CHANGE, CLIMATE CHANGE 101: TECHNOLOGICAL SOLUTIONS 1 (2009), available at <http://www.pewclimate.org/docUploads/climate101-technology.pdf>.

<sup>47</sup> *See id.*

<sup>48</sup> Thomas Dietz, *Narrowing the US Efficiency Gap*, 107 PROC. NAT’L ACAD. SCI. 16007, 16,007–08 (2010).

easier to convince typical consumers to buy more efficient light bulbs than to convince them to turn off the lights when they are not in use.<sup>49</sup>

Theoretically, under perfect market conditions, the supply of renewable energy technologies should rise to meet the demand for them. In other words, the amount of innovation performed should satisfy the need for innovation. Improving America's ability to conserve energy and increase its efficiency does produce some concrete economic benefits. For example, America's energy intensity reportedly declined forty-two percent from 1973 to 2000 due to technological improvements, resulting in savings of more than \$430 billion.<sup>50</sup> But there are several impediments to relying on the free market alone — renewable forms of energy still cost more than traditional fossil fuels, and using renewable energy technologies results in benefits to society that are not directly quantifiable. Like national security, a sustainable environment lacks a fixed monetary value, but is a valuable public good. From an economic perspective, global climate change is a negative externality with global causes and consequences.<sup>51</sup> Conversely, technological solutions that limit the harmful effects of climate change create positive social benefits realized not only by the inventors, but also by the entire country and even the whole world.<sup>52</sup> Because climate change represents an imminent problem, delaying the development of solutions to this problem means society will experience greater negative externalities until the problem is addressed.

### C. *Heated Race*

As demands for energy grow alongside an escalated appreciation of the potential hazards of global climate change, a heated race to develop renewable energy technologies that offer the promise of cleaner, sustainable energy

---

<sup>49</sup> See *id.*

<sup>50</sup> Paul Maidment, *How to Fuel the Coming Century*, FORBES, Nov. 16, 2005, [http://www.forbes.com/2005/11/15/energy-conservation-oil\\_cx\\_pm\\_1116energy\\_maidment.html](http://www.forbes.com/2005/11/15/energy-conservation-oil_cx_pm_1116energy_maidment.html).

<sup>51</sup> See STERN, *supra* note 43, at 33.

<sup>52</sup> It is a basic assumption that the United States is a rational, self-interested actor and thus is primarily interested in furthering its own welfare. Climate change, however, requires a global response and has prompted the international community to recognize the need for joint action. When the United States takes action to address climate change, such as by providing incentives for the innovation and development of new green technologies, it improves its relationships with other countries that are also concerned about climate change. In other words, the United States experiences positive political externalities when it takes proactive action to address climate change.

has become front-page news.<sup>53</sup> Thus far, the United States has been lagging behind other countries in the renewable energy race.<sup>54</sup>

While a number of countries have asserted that they intend to lead the field,<sup>55</sup> China has taken the largest measures to dominate the renewable energy industry.<sup>56</sup> China's Renewable Energy Law of 2006, Medium and Long-Term Renewable Energy Plan, and regulations implemented by government ministries have sought to increase the generation of renewable energy to fifteen percent by 2020.<sup>57</sup> China has also exerted concerted efforts to control the world's supply of rare-earth metals that are needed for renewable energy technologies, such as wind turbines or electric car batteries, enabling it to control the production of ninety-seven percent of these metals.<sup>58</sup>

---

<sup>53</sup> See, e.g., Keith Bradsher, *China Leading Global Race to Make Clean Energy*, N.Y. TIMES, Jan. 30, 2010, at A1, available at <http://www.nytimes.com/2010/01/31/business/energy-environment/31renew.html?ref=science>; Meena Janardhan, *The Race for Renewable Energy Sources*, THE ARAB AMERICAN NEWS, Aug. 22, 2008, <http://www.arabamericannews.com/news/index.php?mod=article&cat=World&article=1400> (discussing efforts by oil-rich Gulf countries not to be left behind in the development of renewable energy sources); *Green China & the Clean-Tech Race*, WBUR.ORG, Sept. 30, 2009, <http://www.onpointradio.org/2009/09/30/green-china-and-the-clean-tech-race> [hereinafter WBUR.org]; *U.S. Seen Losing Renewable Energy Race to Asia*, REUTERS, Sept. 23, 2010, available at <http://www.reuters.com/article/idUSTRE68L54J20100923>; see also Sarah McQuillen Tran, *Why Have Developers Been Powerless To Develop Ocean Power?*, 4 TEX. J. OIL GAS & ENERGY L. 195, 195–96 (2009) (noting that renewable energy has become so desirable that the Federal Energy Regulatory Commission and the Minerals Management Service engaged in a prolonged battle to establish which agency had lead regulatory authority over new forms of renewable energy technology on the Outer Continental Shelf).

<sup>54</sup> Steve Monfort, *U.S. Lags in Clean Tech Investment*, NASDAQ.COM, Mar. 26, 2010, <http://www.nasdaq.com/newscontent/20100326/U.S.-lags-in-clean-tech-investment.aspx>; Bryan Walsh, *Clean Energy: U.S. Lags in Research and Development*, TIME, Aug. 1, 2009, <http://www.time.com/time/health/article/0,8599,1913781,00.html#ixzz0k6UOr2Xa>; see also Atkinson, *supra* note 2. Under Directive 2001/77/EC of the European Parliament (2001), the European Union member nations aimed to produce twenty-one percent of their electricity from renewable energy sources by 2010. In line with this measure, several European countries aggressively invested in the development of renewable energy technologies. The United Kingdom, for example, has led the development of hydrokinetic technologies that depend on ocean wave power. See Tran, *supra* note 53, at 210; *World's Largest Subsea Tidal Turbine Installed in Scotland*, RENEWABLEENERGYWORLD.COM (Sept. 16, 2010), <http://www.renewableenergyworld.com/rea/news/article/2010/09/worlds-largest-subsea-tidal-turbine-installed-in-scotland> (discussing how the world's largest rotor diameter subsea tidal turbine was installed in Scottish waters in 2010). Outside of Europe, China is also aggressively engaged in the renewable energy race. See Bradsher, *supra* note 53.

<sup>55</sup> For example, Russia has announced its intention to become a global leader in the field of green innovation. See Jurgen Janssens, *Russia Leading the Green World*, MARKET MELANGE, Mar. 26, 2010, <http://www.market-melange.com/2010/03/26/russia-leading-the-green-world/>.

<sup>56</sup> See Bradsher, *supra* note 53; see also Tony Cheng, *China Looks to Renewable Power*, BBC NEWS, Mar. 1, 2005, <http://news.bbc.co.uk/1/hi/world/asia-pacific/4306997.stm>.

<sup>57</sup> See BOSSELMAN ET AL., *supra* note 28, at 920–23; see also Cheng, *supra* note 56. China's renewable energy targets are particularly aggressive given that they do not include the nation's nuclear power generation. See BOSSELMAN ET AL., *supra* note 28, at 925. In 2009, China already had “9 GW of installed nuclear power, and planned to build as many as 14 new plants to account for 5 percent of its electricity by 2020.” See *id.*

<sup>58</sup> See Kent Garber, *America's New Energy Dependency: China's Metals*, U.S. NEWS AND WORLD REPORT, July 1, 2009, <http://politics.usnews.com/news/national/articles/2009/07/01/americas-new-energy-dependency-chinas-metals.html>.

China's dominance has led some to speculate that the United States' dependency on Middle Eastern countries for fossil fuels will soon convert to a dependency on China for renewable energy.<sup>59</sup> China has a strong domestic motivation to develop sustainable, renewable energy sources; its heavy reliance on coal has helped it earn the title of the "world's biggest polluter."<sup>60</sup> The Chinese government contends that, rather than risk drowning in its own pollution, it intends to become a green superpower.<sup>61</sup>

The United States has had a slow start in the renewable energy race; however, the race is not yet lost. The renewable energy industry is still in the fledgling state, and renewable energy technologies in the United States and abroad are generally not yet cost-competitive with traditional sources of energy like oil. While the discrepancy in price will likely decrease gradually over time due to rising oil prices and incremental changes to existing innovations,<sup>62</sup> nascent industries, like the renewable energy industry, often lack sufficient funding to perform the optimal level of innovative research and development without a regulatory boost. If the United States provides regulatory incentives to expedite the growth of the renewable energy industry, it could still emerge as a leader in this field, while also taking affirmative action to tackle its climate change and national security problems.

Despite the well-substantiated need for regulatory measures that will encourage more innovation and commercialization of renewable energy technologies, no one solution can be expected to save the day.<sup>63</sup> Whether the problem is defined as climate change or more broadly as a need for solutions that will address America's energy and environmental problems, the PTO maintains jurisdiction over a range of industries that can provide an assort-

---

<sup>59</sup> *Id.* China is well worth watching. Not only does China have one of the fastest growing economies in the developing world, but it has also demonstrated its resilience in times of economic distress. Its recovery from the global economic recession that began in 2008 and continued into 2009 outpaced that of the United States and other developed countries, like Japan and members of the European Union. See U.S. ENERGY INFO. ADMIN., *supra* note 37, at 9.

<sup>60</sup> See Cheng, *supra* note 56 (discussing how China mined roughly 1.8 billion tons of coal in 2004 alone but has been prompted by oil prices and environmental concerns to shift to renewable energy); Roger Harrabin, *China 'Now Top Carbon Polluter,'* BBC NEWS, Apr. 14, 2008, <http://news.bbc.co.uk/2/hi/asia-pacific/7347638.stm> (stating that China has overtaken the U.S. as the world's "biggest polluter").

<sup>61</sup> WBUR.org, *supra* note 53.

<sup>62</sup> One example of how an incremental innovation can have a large effect on an energy industry is China's recent breakthrough in extracting uranium and plutonium from spent fuel. See *China Makes Breakthrough in Extracting Uranium and Plutonium from Spent Fuel*, CNTV.CN, Jan. 3, 2011, <http://english.cntv.cn/program/newsupdate/20110103/101317.shtml>. The new nuclear power technology is expected to make China's nuclear materials sixty times as efficient. See *id.* China anticipates it will be able to use the uranium detected within its borders to fuel its nuclear power plants for up to three thousand years, rather than just fifty to seventy years under current technology. *Id.*

<sup>63</sup> For example, in the climate change context, the Pew Center has explained that "[g]iven the many sources of emissions, a comprehensive response to climate change requires a portfolio of solutions." PEW CTR. ON GLOBAL CLIMATE CHANGE, *supra* note 46, at 4.

ment of solutions to the nation's challenges.<sup>64</sup> Indeed, there is almost no limit on the types of technologies for which the PTO can grant patents. Section 101 of the Patent Act provides that "any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof" is patentable.<sup>65</sup> The Supreme Court has construed this section broadly as including "anything under the sun that is made by man."<sup>66</sup> This breadth of jurisdictional reach enables the PTO to fill gaps that other regulators leave.<sup>67</sup> This ability to fill gaps is especially important given that the United States' regulatory system consists of a fractured assortment of regulatory agencies.<sup>68</sup> Expediting the processing of applications pertaining to socially valuable technologies, like green technologies, meshes perfectly with the PTO's core mission, which is to "promote[ ] industrial and technological progress in the United States and strengthen[ ] the national economy."<sup>69</sup>

---

<sup>64</sup> Some commentators have questioned whether the patent system is the best way to promote innovation, however. See Steven Shavell & Tanguy van Ypersele, *Rewards Versus Intellectual Property Rights*, 44 J.L. & ECON. 525 (2001) (advocating for government rewards to promote innovation rather than the use of intellectual property rights). And during climate treaty negotiations in 2009, China led other developing countries in arguing that the patent system is inappropriate for renewable energy technologies as it impedes the ability of developing countries to access these valuable technologies. See, e.g., U.N. Framework Convention on Climate Change, Ad Hoc Working Group on Long-Term Coop. Action Under the Convention, 5th Sess., Bonn, F.R.G., Mar. 29-Apr. 8, 2009, China's Views on the Fulfillment of the Bali Action Plan and the Components of the Agreed Outcome To Be Adopted by the Conference of the Parties at Its 15th Session, at 23, U.N. Doc. FCCC/AWGLCA/2009/MISC.1 (Mar. 13, 2009), available at <http://unfccc.int/resource/docs/2009/awglca5/eng/misc01.pdf>. The U.S. House of Representatives disagreed. It unanimously passed an amendment to a bill in June of 2009 vowing that the United States should "prevent any weakening of, and ensure robust compliance with and enforcement of, existing international legal requirements . . . for the protection of intellectual property rights related to [green technologies]." See Foreign Relations Authorization Act, Fiscal Years 2010 and 2011, H.R. 2410, 111th Cong. § 1120A (2009); *Vote on House Amendment 187*, GOVTRACK, <http://www.govtrack.us/congress/vote.xpd?vote=h2009-323> (last visited Jan. 5, 2012) (on file with the Harvard Law School Library). In light of the minimal likelihood that Congress will alter its course on this point, it is beyond the scope of this Article to address the merits of this debate. For an informative discussion of the issue, see Lisa Larrimore Ouellette, Comment, *Addressing the Green Patent Global Deadlock Through Bayh-Dole Reform*, 119 Yale L.J. 1727 (2010).

<sup>65</sup> 35 U.S.C. § 101 (2006).

<sup>66</sup> See *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980) (citations omitted). The Court has pronounced just three exceptions: "laws of nature, natural phenomena and abstract ideas." See *Diamond v. Diehr*, 450 U.S. 175, 185 (1981) (citations omitted).

<sup>67</sup> See William W. Buzbee, *Recognizing the Regulatory Commons: A Theory of Regulatory Gaps*, 89 IOWA L. REV. 1, 4 (2003) (discussing how environmental regulation, in particular, is problematic in the sense that regulatory gaps arise from inadequate, overlapping, or inconsistent regulations of a common resource).

<sup>68</sup> Each U.S. agency has its own agenda. If the agendas could be woven together, they would not form a cohesive, integrated policy but rather a patchwork of regulatory goals. See Jody Freeman & Jim Rossi, *Agency Coordination in Shared Regulatory Space*, 125 HARV. L. REV. (forthcoming 2012) (arguing that inter-agency coordination is one of the great challenges of modern governance).

<sup>69</sup> *Our Business: An Introduction to the USPTO*, PTO, <http://www.uspto.gov/web/menu/intro.html> (last visited Jan. 5, 2012) (on file with the Harvard Law School Library) (stating that the mission of the PTO "is to ensure that the intellectual property system contributes to a strong global economy, encourages investment in innovation, and fosters entrepreneurial

In summary, America's over-reliance on energy imports from countries rife with internal conflicts, the recognition that climate change requires proactive action by the United States, and a heated race to establish dominance in the renewable energy sector are driving the United States to prioritize efforts to encourage more innovation and development of renewable energy technologies. The renewable energy industry is representative of other special needs industries that cannot produce the socially optimal level of technological progress without government intervention. Thus, efforts by the PTO to expedite the review of applications pertaining to socially valuable technologies, like renewable energy technologies, appear to be justified in light of the time-sensitive need for regulatory assistance that will aid the innovation and development of these technologies and the PTO's ability to fill a regulatory gap.

## II. A SOCIALLY IRRESPONSIBLE SYSTEM

Despite the compelling need for government stimuli to assist certain special needs industries, the PTO fails to prioritize these industries in any meaningful way in its review process. As a result, substantial harm to public interests has occurred.

To obtain a patent, an inventor must file an application with the PTO in a timely fashion.<sup>70</sup> Unfortunately, applicants do not usually receive a timely response from the Patent Office regarding the patentability of their applications. In 1876, Alexander Graham Bell received a patent for the telephone less than one month after submitting an application to the Patent Office.<sup>71</sup> In fiscal year 2009, the average time from the filing of an application to patent issuance or abandonment was 34.6 months and was projected to increase to 34.8 months in fiscal year 2010.<sup>72</sup> The mounting backlog of unprocessed applications at the Patent Office carries serious repercussions for inventors and the public — the backlog diffuses the incentives for the innovation and commercialization of key technologies that could improve America's competitiveness. The PTO traditionally recognized the heightened value of technologies that further national interests and provided socially valuable patent

---

spirit.”). Specifically, the PTO promotes technological progress and strengthens the national economy by (1) administering the laws relating to patents and trademarks; (2) advising government entities (e.g., the Secretary of Commerce, the President of the United States, and the Administration) on patent, trademark, and copyright protection; and (3) advising government entities on the trade-related aspects of intellectual property. *See id.* Similarly, the mission of the U.S. Department of Commerce “is to help make American businesses more innovative at home and more competitive abroad.” *The United States Department of Commerce*, U.S. DEPT OF COMMERCE, <http://www.commerce.gov/> (last visited Jan. 5, 2012) (on file with the Harvard Law School Library).

<sup>70</sup> DONALD S. CHISUM, CHISUM ON PATENTS § 1 (2010).

<sup>71</sup> DAN L. BURK & MARK A. LEMLEY, *THE PATENT CRISIS AND HOW THE COURTS CAN SOLVE IT* 22 (2009).

<sup>72</sup> *See* PTO, *supra* note 12, at 10.

applications with limited opportunities for expedited review.<sup>73</sup> However, to cut back on the popularity of these opportunities, the PTO instituted the revised Accelerated Examination program,<sup>74</sup> a program notorious for placing an excessive burden on applicants who are desperate enough to use it. Rather than promoting social goals, it has essentially eliminated the opportunities for fast-tracked review that high-priority applications once received.<sup>75</sup> The PTO's Green Technology Pilot Program represents a positive, albeit imperfect, step towards reforming the PTO's socially irresponsible system.

### A. Accelerated Examination

The rising delays in the PTO review process impose substantial costs on patentees and society at large. An owner of a patent has the right to exclude others from most practical applications of a claimed invention for a limited time.<sup>76</sup> This monopoly power can provide startups and other businesses with a distinct competitive advantage as they can use patents to attract venture capital investment, develop additional products and services, and create new jobs.<sup>77</sup> Because a patent secures an invention for only a limited time and the clock typically starts ticking from the day the application is filed,<sup>78</sup> long pendency times generally reduce the value of patents to applicants.<sup>79</sup> As the value of a patent diminishes, the ability of a patent to provide an incentive for innovation, a fundamental justification for the patent system, is correspondingly reduced.<sup>80</sup> At the same time, commercialization of technologies

---

<sup>73</sup> See *infra* Part II.A.

<sup>74</sup> See generally Changes to Practice for Petitions in Patent Applications To Make Special and for Accelerated Examination, 71 Fed. Reg. 36,323 (June 26, 2006) (describing the revised Accelerated Examination program requirements).

<sup>75</sup> See, e.g., Rai, *supra* note 17, at 2076–77 (commenting that the disclosure requirements of the revised Accelerated Examination program are sufficiently burdensome that relatively few applicants utilize the program); Jason D. Grier, Comment, *Chasing its Own Tail? An Analysis of the PTO's Efforts to Reduce the Patent Backlog*, 31 Hous. J. INT'L L. 617, 634–35 (2009) (arguing that the revised Accelerated Examination program fails to provide needed flexibility and imposes extra burdens on the applicant).

<sup>76</sup> The Patent Act entitles patent owners to exclude others from making, using, selling, or offering to sell the claimed invention in this country and entitles the patent owners to exclude others from importing the invention from another country without the authority of the patent owner. See 35 U.S.C. § 271(a), (e)(4)(B) (2010).

<sup>77</sup> See RAI ET AL., *supra* note 17, at 2–4; see also Henry R. Nothhaft & David Kline, *The Biggest Job Creator You Never Heard Of: The Patent Office*, HARV. BUS. REV. (May 6, 2010, 12:37 PM), [http://blogs.hbr.org/cs/2010/05/the\\_biggest\\_job\\_creator\\_you\\_ne.html](http://blogs.hbr.org/cs/2010/05/the_biggest_job_creator_you_ne.html).

<sup>78</sup> See 35 U.S.C. § 154(a)(2) (2006) (stating that the term of a patent usually ends “20 years from the date on which the application for the patent was filed in the United States or, if the application contains a specific reference to an earlier filed application or applications under . . . this title, from the date on which the earliest such application was filed”). *But see* 37 C.F.R. § 1.701 (2010) (providing several bases for patent term extensions).

<sup>79</sup> See LONDON ECON., ECONOMIC STUDY ON PATENT BACKLOGS AND A SYSTEM OF MUTUAL RECOGNITION, at viii (2010), available at <http://www.ipo.gov.uk/p-backlog-report.pdf>. This phenomenon is not universal, as some applicants may prefer to have the process delayed so that they can focus resources or time on other endeavors.

<sup>80</sup> *Id.* at viii–xi.



may be delayed until a patent is granted, as competing parties cannot predict *ex ante* the precise scope of any patent rights that will be granted.<sup>81</sup> For industries where there is an urgent need for the innovation and development of new technologies, like the renewable energy industry, delay hurts both inventors and the public.

Although patent examiners at the PTO normally review new patent applications in the order of their U.S. filing date,<sup>82</sup> between at least 1982 and 2004 the PTO initiated opportunities for accelerated processing of an assortment of high-priority applications, including those relating to environmental quality, energy resource development, counterterrorism, recombinant DNA, HIV/AIDS, and cancer, among others.<sup>83</sup> Applicants could receive accelerated review simply by filing a petition to make their applications “special,” proving in their petitions that their applications fell within a category designated by the PTO as deserving of preferential treatment, and paying any required fees.<sup>84</sup> To illustrate, applicants who sought special status on the basis of environmental quality needed to state in their petition under 37 C.F.R. section 1.102 that special status was being sought “because the invention materially enhance[d] the quality of the environment of mankind by contributing to the restoration or maintenance of the basic life-sustaining natural elements.”<sup>85</sup> Similarly, applicants who sought special status on the basis of energy development or conservation had to state in their petitions that special status was sought because the invention materially contributed to either “(A) the discovery or development of energy resources, or (B) the more efficient utilization and conservation of energy resources.”<sup>86</sup> The materiality standard could be satisfied either from the face of the application disclosure or through the submission of an explanatory statement by the applicant, assignee, or an attorney or agent registered to practice before the Patent Office.<sup>87</sup>

Filing a petition for special status on one of these socially valuable grounds was exceedingly popular.<sup>88</sup> Indeed, it was too popular for the PTO’s liking.<sup>89</sup> In August of 2006, the PTO implemented new rules for accelerated examination that essentially sounded the death knell for the expedited re-

---

<sup>81</sup> *Id.* at xi.

<sup>82</sup> See MPEP, *supra* note 11, § 708.

<sup>83</sup> See *id.* § 708.02.

<sup>84</sup> See *id.* Applicants filing a petition for special status needed to comply with the guidelines and requirements set forth in MPEP section 708.02 subsections I-II and V-XII.

<sup>85</sup> *Id.* § 708.02(V).

<sup>86</sup> *Id.* § 708.02(VI).

<sup>87</sup> See *id.* § 708.02(V)–(VI).

<sup>88</sup> Telephone Interview with Pinchus M. Laufer, Sr. Legal Advisor, PTO (Feb. 25, 2011). The PTO has not released any official statistics to indicate precisely how often these petitions were filed, however.

<sup>89</sup> See *id.* (describing how cutting back the flood of petitions for special status and providing a true “fast track” review process motivated the PTO to institute the revised Accelerated Examination program).

view of socially valuable inventions.<sup>90</sup> Rather than designate particular categories of inventions as deserving of expedited review due to their social worth, the PTO created a one-size-fits-all program, the revised Accelerated Examination program, that allows any applicant to file a petition for special status.<sup>91</sup> It made sense to stop prioritizing some of the categories of technologies that had been receiving preferential status, like semiconductors, as they were no longer national priorities. But the PTO provided no justification for eliminating all preferential treatment for socially valuable inventions. Even though the revised Accelerated Examination program strives to provide inventors with a final decision on their applications within twelve months, a shorter pendency period than previously provided to any recipient of special status,<sup>92</sup> and holds the potential to raise the quality of issued patents, the program has attracted little interest from inventors due to the liabilities and burdens it places on applicants.

Petitions for accelerated review must now comply with the taxing requirements of the Manual of Patent Examining Procedure (“MPEP”) section 708.02(a).<sup>93</sup> Most troubling to inventors, applicants who file petitions for the revised Accelerated Examination program must do a fair amount of the PTO’s work and face potentially severe penalties if they make any errors. This burden is most apparent in the requirements of submitting a pre-examination search report and preparing an examination support document.

First of all, the pre-examination search requirements substantially alter an applicant’s responsibilities. Normally, applicants have a duty to disclose to the PTO relevant prior art of which they are aware, but they are not required to search for prior art.<sup>94</sup> Under the PTO’s revised Accelerated Exami-

---

<sup>90</sup> See Changes to Practice for Petitions in Patent Applications To Make Special and for Accelerated Examination, 71 Fed. Reg. 36,323 (June 26, 2006) (revising procedures for requesting accelerated review).

<sup>91</sup> See MPEP, *supra* note 11, § 708.02(VIII).

<sup>92</sup> See Press Release, PTO, USPTO to Give Patent Filers Accelerated Review Option (June 26, 2006), available at <http://www.uspto.gov/news/pr/2006/06-37.jsp>.

<sup>93</sup> See Changes to Practice for Petitions in Patent Applications To Make Special and for Accelerated Examination, 71 Fed. Reg. at 36,326–27; see also MPEP, *supra* note 11, § 708.02(a). Only three types of petitions for special status do not need to comply with the revised Accelerated Examination program: petitions based on the applicant’s poor health, advanced age, or involvement in the Patent Prosecution Highway (“PPH”) pilot program. The PPH is an international network of agreements between patent offices to expedite the review of patent applications based on the findings of another patent office. See, e.g., Press Release, PTO, U.S. and Japan to Pilot Patent Prosecution Highway (May 24, 2006), available at <http://www.uspto.gov/news/pr/2006/06-35.jsp>. The PTO has PPH agreements with Australia, Austria, Canada, China, Denmark, the European Patent Office, Finland, Germany, Hungary, Iceland, Israel, Japan, Mexico, Norway, Russia, Singapore, South Korea, Spain, and the United Kingdom. See *Patent Prosecution Highway (PPH) - Fast Track Examination of Applications*, PTO, [http://www.uspto.gov/patents/init\\_events/pph/index.jsp](http://www.uspto.gov/patents/init_events/pph/index.jsp) (last visited Jan. 5, 2012) (on file with the Harvard Law School Library).

<sup>94</sup> Compare MPEP, *supra* note 11, § 609 (stating that applicants have a duty of disclosure, but that there “is no requirement that an applicant make a patentability search”), with *id.* § 708.02(a)(I)(H) (requiring applicants, at the time of the filing, to “provide a statement that a preexamination search was conducted”). The preexamination search statement must also include a statement of the “class and subclass and the date of the search . . . and for database

nation procedures, applicants must perform a pre-examination search of all potential prior art, including U.S. patents and patent application publications, foreign patent documents, and non-patent literature.<sup>95</sup> This search could easily cost the applicants thousands of dollars in additional legal fees.<sup>96</sup> Plus, if a claim is amended or added later that includes a feature that was not included in the pre-examination search, the applicant will not be permitted to make the amendment or add the new claim.<sup>97</sup> This structure forces applicants filing petitions for special status to try to anticipate any and all potential amendments or revisions to the claims.

The required filing of an examination support document (“ESD”), which has been coined the “express suicide document,”<sup>98</sup> represents a second major impediment to use of the revised Accelerated Examination program. As part of the ESD, applicants must submit to the PTO an Information Disclosure Statement (“IDS”) that discloses all prior art that is deemed most closely related to the subject matter encompassed by the claims. Applicants must further explain what the prior art teaches and how their invention differs from it.<sup>99</sup> Specifically, for every prior art reference mentioned in the IDS, applicants must identify all the limitations in their claims that are disclosed by the reference and specify where the limitations are disclosed in the cited reference. Applicants must further state how their invention is useful and show how the application’s written description<sup>100</sup> supports the claimed invention.<sup>101</sup>

The pre-examination search and ESD requirements create three practical problems for inventors: (1) they increase the legal fees for prosecuting an application; (2) they push the applicants to narrow the scope of their claims at an early stage; and (3) they render any patents that issue out of this pro-

---

searches, the search logic or chemical structure or sequence used as a query, the name of the file or files searched and the database service, and the date of the search.” *Id.*

<sup>95</sup> PTO, GUIDELINES FOR APPLICANTS UNDER THE NEW ACCELERATED EXAMINATION 1 (2006) [hereinafter PTO, GUIDELINES], available at [http://www.uspto.gov/patents/process/file/accelerated/ae\\_guidelines\\_011111.pdf](http://www.uspto.gov/patents/process/file/accelerated/ae_guidelines_011111.pdf).

<sup>96</sup> See generally *Budget Estimator for Patents*, BROWN & MICHAELS, <http://www.bpmlegal.com/patfees.html#other> (last visited Jan. 5, 2011) (on file with the Harvard Law School Library) (indicating that the cost of a clearance search to determine if any currently existing or valid patents might be infringed by a product is often at least \$25,000).

<sup>97</sup> PTO, GUIDELINES, *supra* note 95.

<sup>98</sup> Gene Quinn, *Accelerated Exam in Inequitable Conduct Friendly Era*, IP WATCHDOG (Aug. 11, 2009, 5:30AM), <http://ipwatchdog.com/2009/08/11/accelerated-exam-in-inequitable-conduct-friendly-era/id=4833/>.

<sup>99</sup> See MPEP, *supra* note 11, § 708.02.

<sup>100</sup> The “written description” refers to that portion of the patent application in which the inventor must demonstrate that he has possession of the invention. It must enable one skilled in the art to make and use the invention. In particular,

[t]he specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

35 U.S.C. § 112 (2006).

<sup>101</sup> See MPEP, *supra* note 11, § 708.02.

gram potentially subject to a greater risk of unenforceability. The third problem has been most troubling to applicants because “[e]ach individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the [Patent] Office, which includes a duty to disclose to the [Patent] Office all information known to that individual to be material to patentability.”<sup>102</sup> The U.S. Court of Appeals for the Federal Circuit (“Federal Circuit”), which has exclusive nationwide jurisdiction over appeals from all district court cases arising under the patent laws,<sup>103</sup> has made clear that a breach of this duty during the prosecution of a patent application constitutes “inequitable conduct” and renders all the claims of the patent unenforceable for the life of the patent.<sup>104</sup> Litigating parties seeking to render a patent unenforceable may argue that, among other things, the pre-examination search was insufficient, the applicant did not submit all relevant prior art to the PTO, or the applicant mischaracterized the prior art.<sup>105</sup> Thus, patent practitioners have been concerned that the expediency of the revised Accelerated Examination program may open them up to a higher legal risk of having the patent rendered invalid in subsequent litigation. It is too early to know whether recent judicial and legislative actions taken to limit the availability of inequitable conduct claims will affect the popularity of the revised Accelerated Examination program.<sup>106</sup>

In summary, though the PTO traditionally recognized the social importance of certain categories of applications, its revised Accelerated Examination procedures do not. The burdens imposed on patent applicants by the revised Accelerated Examination program have discouraged applicants with socially valuable applications from seeking expedited review and getting their inventions to market earlier. Instead of serving public needs, the PTO has instituted a socially irresponsible system for expediting patent applications.

---

<sup>102</sup> 37 C.F.R. § 1.56(a) (2011).

<sup>103</sup> 28 U.S.C. § 1295 (2006).

<sup>104</sup> See *Kingsdown Med. Consultants, Ltd. v. Hollister Inc.*, 863 F.2d 867, 877 (Fed. Cir. 1988) (en banc).

<sup>105</sup> See Matt Osenga, *Accelerated Examination*, INVENTIVE STEP (Sep. 10, 2009, 4:13 PM), <http://inventivestep.net/2009/09/10/accelerated-examination/> (discussing some of the perceived problems with the revised Accelerated Examination program). Of course, not every inequitable conduct claim will be won. A winning claim would likely require egregious facts, rather than evidence of mere negligence.

<sup>106</sup> The Federal Circuit has called the inequitable conduct doctrine a “plague” on the patent system and has raised the standards for prevailing on an inequitable conduct claim. *Therasense, Inc. v. Becton, Dickinson & Co.*, 649 F.3d 1276, 1290 (Fed. Cir. 2011). In the America Invents Act, Congress further attempted to reduce concerns about inequitable conduct by creating a new procedure that enables patent holders to submit supplemental information to correct errors or omissions in proceedings before the PTO. America Invents Act, Pub. L. No. 112-29, § 257 (2011).

### B. *Green Technology Pilot Program*

The PTO's revised Accelerated Examination program does not represent the only means by which a patent application can be fast tracked. In recent years, the PTO has initiated a handful of experimental programs that expedite certain categories of applications.<sup>107</sup> None of these programs aided a category of socially valuable applications until actions by foreign patent offices forced the PTO to take notice. On May 12, 2009, the United Kingdom Intellectual Property Office ("UK IPO") commenced its "Green Channel" initiative to expedite the review of applications on green technologies.<sup>108</sup> Soon after, the Japanese Patent Office ("JPO"),<sup>109</sup> the Australian Patent Office ("IP Australia"),<sup>110</sup> and the Korean Intellectual Property Patent Office ("KIPO")<sup>111</sup> followed suit by creating similar programs.<sup>112</sup> In response to pressures from the Obama Administration, in December of 2009 the PTO created its own program, the Green Technology Pilot Program,<sup>113</sup> to

---

<sup>107</sup> For example, on November 27, 2008, the PTO established the Patent Application Backlog Reduction Stimulus Plan. Under this program, a small entity that expressly abandoned a co-pending, unexamined application could have another application advanced out of turn. See Patent Application Backlog Reduction Stimulus Plan, 74 Fed. Reg. 62,285, 62,285-87 (Nov. 27, 2009). The duration of this pilot program was extended on February 1, 2010, until June 30, 2010. Extension of the Patent Application Backlog Reduction Stimulus Plan, 75 Fed. Reg. 5041, 5041 (Feb. 1, 2010). More recently, on June 3, 2010, the PTO announced a proposal to establish three distinct patent processing tracks (the "Three-Track Examination Program"). Press Release, PTO, USPTO Proposes To Establish Three Patent Processing Tracks (June 3, 2010), available at [http://www.uspto.gov/news/pr/2010/10\\_24.jsp](http://www.uspto.gov/news/pr/2010/10_24.jsp). The proposed tracks consist of an accelerated examination (Track I), traditional examination (Track II), and an applicant-controlled examination that could be delayed for up to thirty months prior to examination (Track III). *Id.*

<sup>108</sup> See Press Release, UK IPO, *supra* note 20; *Green Channel Patent Applications Data*, *supra* note 20; see also Press Release, UK IPO, UK 'Green' Inventions to Get Fast-Tracked Through Patent System (May 12, 2009), available at <http://www.ipo.gov.uk/about/press/press-release/press-release-2009/press-release-20090512.htm>.

<sup>109</sup> See ONDA TECHNO INTL. PATENT ATTORNEYS, *supra* note 20.

<sup>110</sup> See Press Release, Richard Marles, *supra* note 20.

<sup>111</sup> The KIPO program, which KIPO claims provides the fastest examination in the world, made headlines in October of 2009 when the agency reported that one examination was completed in less than a month. See Press Release, KIPO, *supra* note 20; see also NUTTER MCCLENNEN & FISH LLP, *supra* note 20.

<sup>112</sup> The Canadian Intellectual Property Office, which is implementing permanent rules to provide for the expedited review of green applications, is among a handful of other global patent offices that have expressed an interest in introducing opportunities for the accelerated review of green applications into their own systems. See Press Release, Can. Intellectual Prop. Office, Expedited Examination of Patent Applications Related to Green Technology (Oct. 5, 2010), available at <http://www.cipo.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/wr02930.html>; see also Estelle Derclaye, *Not Only Innovation But Also Collaboration, Funding, Goodwill And Commitment: Which Role for Patent Laws in Post-Copenhagen Climate Change Action*, 9 J. MARSHALL REV. INTELL. PROP. L. 657, 662 (2010) (stating that the "UK IPO reports that China, Japan and Brazil have expressed interest in introducing similar fast track systems").

<sup>113</sup> See Pilot Program for Green Technologies Including Greenhouse Gas Reduction, 74 Fed. Reg. 64,666 (Dec. 8, 2009); see also Kappos, *supra* note 15; Press Release, PTO, The U.S. Commerce Department's Patent and Trademark Office (USPTO) Will Pilot a Program To Accelerate the Examination of Certain Green Technology Patent Applications (Dec. 7, 2009), available at [http://www.uspto.gov/news/pr/2009/09\\_33.jsp](http://www.uspto.gov/news/pr/2009/09_33.jsp).

expedite the review of certain “green technologies.”<sup>114</sup> Although this program represents a step in the right direction, it looks far greener than it actually is.<sup>115</sup>

Several elements of the Green Technology Pilot Program have hindered its effectiveness. Applications accepted under the Green Technology Pilot Program receive special status in any appeal to the Board of Patent Appeals and Interferences, as well as in the patent publication process.<sup>116</sup> But unlike applications advanced under the revised Accelerated Examination program, which are accorded special status throughout the entire course of prosecution before an examiner, applications proceeding via the Green Technology Pilot Program have only been accorded special status prior to the first Office action.<sup>117</sup> This first Office action typically consists of only the first of multiple letters from an examiner to an applicant describing the legal status of the application. Moreover, while a final decision is made on applications reviewed under the revised Accelerated Examination program within twelve months, the PTO indicated the pilot program would only lower the average wait for a final decision by twelve months,<sup>118</sup> which means that applicants under this program still have to wait about two years for a patent.

The PTO further placed three major restrictions on the Green Technology Pilot Program that did not exist under the revised Accelerated Examination procedures.<sup>119</sup> First, to qualify for the Green Technology Pilot Program, applications originally had to be filed prior to December 8, 2009, and petitions for special status had to be filed prior to December 8, 2010.<sup>120</sup> In other words, accelerated review was only available for one year to applications already in the system — the program had no relevance to technologies that had not yet been invented. The second restriction was a cap on the number of eligible applications. Secretary of Commerce Gary Locke had stated that 25,000 pending applications were eligible for the Green Technology Pilot Program,<sup>121</sup> but the PTO limited the scope of the program to the first 3000

---

<sup>114</sup> The PTO specified that a green technology is one that “materially enhances the quality of the environment, or that materially contributes to: (1) The discovery or development of renewable energy resources; (2) the more efficient utilization and conservation of energy resources; or (3) greenhouse gas emission reduction.” 74 Fed. Reg. at 64,667.

<sup>115</sup> In a calculated effort to attract public attention, the officials timed their announcement to coincide with the commencement of the fifteenth session of the Conference of the Parties international climate treaty talks in Copenhagen, Denmark. Martin LaMonica, *Patent Office Puts Green Tech on Fast Track*, CNET NEWS, Dec. 8, 2009, [http://news.cnet.com/8301-11128\\_3-10411175-54.html](http://news.cnet.com/8301-11128_3-10411175-54.html).

<sup>116</sup> 74 Fed. Reg. at 64,666.

<sup>117</sup> An Office action is a written opinion of patentability from the PTO. See MPEP, *supra* note 11, § 1.104(a).

<sup>118</sup> See Press Release, PTO, *supra* note 113.

<sup>119</sup> See 74 Fed. Reg. at 64,668.

<sup>120</sup> See *id.* at 64,667.

<sup>121</sup> Gary Locke, U.S. Sec’y of Commerce, Remarks at Announcement of USPTO Green Tech Pilot Program (Dec. 7, 2009) [hereinafter Locke, Remarks at Announcement], available at <http://www.commerce.gov/news/secretary-speeches/2009/12/07/remarks-announcement-uspto-green-tech-pilot-program>.

grantable petitions for special status.<sup>122</sup> Finally, the PTO limited the program to 79 eligible classifications out of over 450 classifications recognized by the PTO “to balance the workload and gauge resources needed to achieve the goals of the Green Technology Pilot Program.”<sup>123</sup> The only relative benefit of the Green Technology Pilot Program over the revised Accelerated Examination program was the removal of the requirements that applicants conduct pre-examination searches and provide ESDs to the PTO.<sup>124</sup>

It soon became abundantly clear that the Green Technology Pilot Program had generated sub-optimal participation levels. Five months after going into effect, the PTO had received fewer than one thousand requests from applicants who wanted their applications to be made special under the Green Technology Pilot Program.<sup>125</sup> Of these requests, the PTO had awarded special status to only 342 patent applications.<sup>126</sup> Following internal review, the PTO determined that the classification requirement was too restrictive and not necessary to maintain a balanced workload.<sup>127</sup> Indeed many environmentally beneficial inventions had been ineligible for the program due to the classification requirement.<sup>128</sup> The PTO eliminated the classification restriction on May 21, 2010.<sup>129</sup> This revision opened up the program to all viable “green technologies.”<sup>130</sup> Applicants who had previously been denied eligibility for the program on the basis of the classification restriction were allowed to submit renewed petitions.<sup>131</sup> Despite the PTO’s admission that the Green Technology Pilot Program had garnered lower participation levels than anticipated, the PTO stated that it had “received positive feedback and suggestions from stakeholders” on the program.<sup>132</sup>

---

<sup>122</sup> See 74 Fed. Reg. at 64,666.

<sup>123</sup> *Id.* at 64,666–69. For a list of the classifications that were originally eligible for the program, see Appendix.

<sup>124</sup> Compare 74 Fed. Reg. at 64,667–68, with MPEP, *supra* note 11, § 708.02(a)(I)(G)–(I).

<sup>125</sup> Press Release, PTO, USPTO Expands Green Technology Pilot Program to More Inventions (May 21, 2010), available at [http://www.uspto.gov/news/pr/2010/10\\_21.jsp](http://www.uspto.gov/news/pr/2010/10_21.jsp).

<sup>126</sup> *Id.*

<sup>127</sup> See Elimination of Classification Requirement in the Green Technology Pilot Program, 75 Fed. Reg. 28,554, 28,554 (May 21, 2010).

<sup>128</sup> For example, a bottle/container coupling system that served to reduce landfill wastes by altering disposable water bottles in such a way that they could be fitted end-to-end with one another was excluded by the classification requirement. U.S. Patent No. 7,644,828 (filed Apr. 11, 2007); see also *Water Bottles*, MMDNEWswire.COM, Feb. 9, 2010, <http://www.mmdnewswire.com/water-bottles-6938.html> (explaining the utility of Patent No. ‘828). In addition, the classification requirement originally excluded all applications regarding systems and methods using temperature and humidity controls to promote energy conservation (“USPC 236”). See, e.g., 74 Fed. Reg. at 64,668–69 (showing that USPC 236 was originally ineligible for the GTPP).

<sup>129</sup> See 75 Fed. Reg. at 28,554.

<sup>130</sup> See *id.*; see also 74 Fed. Reg. at 64,666–67 (defining “green technologies”).

<sup>131</sup> See 75 Fed. Reg. at 28,555.

<sup>132</sup> *Id.* No comments on the Green Technology Pilot Program were made available to the public, however. See *Changes to Practice for Petitions to Make Special in Patent Applications Pertaining to Green Technologies*, REGULATIONS.GOV, <http://www.regulations.gov/#!docketDetail;D=PTO-P-2009-0038> (last visited Jan. 5, 2012) (on file with the Harvard Law School Library) (showing no public submissions available); *Elimination of Classification Requirement in the Green Technology Pilot Program*, REGULATIONS.GOV, <http://www.regulations.gov/>

On November 10, 2010, the PTO again revised the Green Technology Pilot Program.<sup>133</sup> First of all, the PTO extended the program until December 31, 2011, slightly more than one year past the original deadline.<sup>134</sup> In addition, the PTO opened up the program to applications filed on or after December 8, 2009.<sup>135</sup> The PTO thereby eliminated the requirement that an application had to have been pending when the program began. At the same time, the PTO confirmed that the original size constraint on the program, which limited the program to the first 3000 grantable petitions, remained in effect.<sup>136</sup> This constraint had come to carry little meaning, however. As of November 2, 2010, the PTO had granted only 790 out of 1595 petitions, a far stretch from the limit of 3000 grantable petitions. Given these statistics, it is unsurprising that this expansion of the program was made with little fanfare. Unlike the original implementation of the pilot program and the removal of its classification restriction, these changes were not accompanied by a press release. The sole explanation for the changes was that they would “permit more applications to qualify for the program.”<sup>137</sup>

Though lacking in sure-footedness at its start, the Green Technology Pilot Program should not be written off as a bold, but entirely unsuccessful, adventure. As of December 5, 2011, the number of petitions filed has reached 4961, of which 2913 petitions have been granted and 698 patents have already been published.<sup>138</sup> In other words, 698 green technologies have had the opportunity to surge forward onto the marketplace rather than await examination for the next couple of years in the PTO’s backlog. The statistics for the Green Technology Pilot Program are also significant when contrasted with those for the PTO’s revised Accelerated Examination program. Between the inception of the revised Accelerated Examination program in August of 2006 and December 31, 2010, only 4464 applicants filed petitions under the program.<sup>139</sup> Averaging the number of petitions filed over the period of time these programs have been in force, the Green Technology Pilot Program has had about 207 applications filed per month, whereas the revised Accelerated Examination program has had less than forty-five percent as many applications filed monthly (86.5 applications). Given that the Green Technology Pilot Program is open to only a narrow group of patent applica-

---

#!/docketDetail;D=PTO-P-2010-0042 (last visited Jan. 5, 2012) (on file with the Harvard Law School Library) (same); *see also Green Technology Pilot Program*, REGULATIONS.GOV, <http://www.regulations.gov#!/docketDetail;D=PTO-P-2010-0050> (last visited Jan. 5, 2012) (on file with the Harvard Law School Library) (same).

<sup>133</sup> *See* Expansion and Extension of the Green Technology Pilot Program, 75 Fed. Reg. 69,049, 69,049–50 (Nov. 10, 2010).

<sup>134</sup> *Id.*

<sup>135</sup> *Id.*

<sup>136</sup> *Id.*

<sup>137</sup> *Id.* at 69,050.

<sup>138</sup> *Green Petition Report Summary*, PTO (Dec. 5, 2011) [hereinafter *Green Petition*], [http://www.uspto.gov/patents/init\\_events/green\\_report\\_summary20111205.pdf](http://www.uspto.gov/patents/init_events/green_report_summary20111205.pdf) (on file with the Harvard Law School Library).

<sup>139</sup> *See Accelerated Examination Statistics*, PTO, 1 (Jan. 5, 2011), [http://www.uspto.gov/patents/process/file/accelerated/ae\\_stats\\_v8\\_05jan2011.pdf](http://www.uspto.gov/patents/process/file/accelerated/ae_stats_v8_05jan2011.pdf) (on file with the Harvard Law School Library).



tions (green technologies), whereas there are no restrictions at all on the types of technologies eligible for the revised Accelerated Examination program, the substantial discrepancy between the average values for the programs demonstrates that the Green Technology Pilot Program has been a relative hit. What is more, since the PTO implemented its latest revisions, the rate of petitions for special status filed per month under the pilot program has nearly doubled. But while the Green Technology Pilot Program has been substantially more popular than the revised Accelerated Examination program, the level of participation in the Green Technology Pilot Program has still been remarkably limited. Applicants filed fewer than 5000 petitions for special status under the pilot program during its first twenty-four months of implementation, a far cry from the 25,000 applications the Secretary of Commerce claimed were eligible.<sup>140</sup> These preliminary statistics suggest that, while the Green Technology Pilot Program has been a relative success compared to the revised Accelerated Examination program, the program should not serve as a model for prioritizing other socially valuable patent applications until the PTO recognizes and addresses its deficiencies.

### III. OPTIMIZING THE PATENT BARGAIN

Although the PTO currently fails to meaningfully prioritize socially valuable patents, the constitutional purposes underlying the existence of the patent system support reform of this deficiency. The heart of the patent system is an exchange of a benefit to the public, the promotion of “the Progress of Science and useful Arts,” in return for an inventor’s ability to hold the exclusive rights to an invention for a limited time.<sup>141</sup> Not every grant of a patent benefits society, however. The PTO does not discriminate against inventions that could be seen as detrimental to society (e.g., those enhancing tobacco production or pornographic products) or of little worth (e.g., those with little to no likelihood of commercial success).<sup>142</sup> At the other end of the

---

<sup>140</sup> Compare Green Petition, *supra* note 138, at 1, with Locke, Remarks at Announcement, *supra* note 121.

<sup>141</sup> U.S. CONST. art. I, § 8, cl. 8; see *Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470, 480–81 (1974) (“The stated objective of the Constitution . . . is to ‘promote the Progress of Science and useful Arts.’ The patent laws . . . have a positive effect on society . . . by way of increased employment and better lives for our citizens.”).

<sup>142</sup> See *Juicy Whip, Inc. v. Orange Bang, Inc.*, 185 F.3d 1364, 1366–68 (Fed. Cir. 1999). The court stated:

To be sure, since Justice Story’s opinion in *Lowell v. Lewis*, 15 F. Cas. 1018 (C.C.D. Mass. 1817), it has been stated that inventions that are “injurious to the well-being, good policy, or sound morals of society” are unpatentable . . . . [But this principle] has not been applied broadly in recent years . . . .

. . . .  
 . . . As the Supreme Court put the point more generally, “Congress never intended that the patent laws should displace the police powers of the States, meaning by that term those powers by which the health, good order, peace and general warfare of the community are promoted.”

spectrum are inventions that are urgently needed to enhance the quality of life for millions of U.S. citizens, improve America's competitiveness before it falls too far behind other nations, and save lives. Unfortunately, the private incentives to develop these technologies are often inadequate, considering the benefits that society would receive from their use. Given the discrepancy in the importance of different inventions to society, providing preferential treatment to those inventions most likely to "promote the Progress of Science and the useful Arts" should be the PTO's highest priority. By using the Green Technology Pilot Program as a model for broader permanent programs that target high-priority technologies, while also recognizing the shortcomings of this program, the PTO can help the United States surge forward and better optimize the fundamental patent bargain.<sup>143</sup>

The gap between private incentives to develop green technologies and the social benefits that arise from such technologies justified action by the PTO to expedite the processing of green patent applications. But the PTO's approach in the Green Technology Pilot Program has been far from ideal. By providing only nominal benefits to applicants who spend considerable resources to petition for special status under the program, the PTO has effectively paid lip service to environmental goals while doing little to aid the needy green industry. Even more worrisome, by restricting program eligibility to already-invented technologies,<sup>144</sup> the PTO has neglected one of its most basic regulatory purposes: fueling the innovation of new socially valuable technologies. These fundamental problems with the pilot program must be rectified before it can serve as a constructive model for broader programs that expedite the review of applications for other high-priority technologies. Concerns about the impropriety of allowing the PTO to define what constitutes a socially valuable technology and about fairness, however, can largely be overcome in light of the purposes of the patent system and the existence of mechanisms that ameliorate these concerns.

#### A. *Deficiencies in the Green Model*

One of the most apparent weaknesses in the PTO's Green Technology Pilot Program is its lack of benefits for participating inventors, creating the unsurprising result that relatively few opted to participate in the program. But the Green Technology Pilot Program's failure to provide incentives for the innovation of new green technologies holds even more ominous implications for the future. The Green Technology Pilot Program effectively looks "green" without being "green."

---

*Id.* (citation omitted).

<sup>143</sup> Of course, the PTO is not the only entity capable of furthering the patent bargain. Congress and the courts have major roles to play as well.

<sup>144</sup> See *supra* Part II.B.2.

### 1. *Barriers to Participation*

For parties interested in expedited review, the most obvious problems with the Green Technology Pilot Program are the lack of tangible benefits for inventors who partake of the program and the difficulty an inventor has of meeting the program's eligibility requirements.<sup>145</sup> These practical problems have prevented technologies of great environmental value from taking advantage of the Green Technology Pilot Program.

Few inventors took advantage of the Green Technology Pilot Program because few advantages flowed from the program. The PTO claimed that the fast-tracking opportunities available under the Green Technology Pilot Program would enable applicants to get a final decision on their applications about one year faster than the average wait for a decision for applications in green technology areas.<sup>146</sup> However, the PTO's statistics were misleading and suggest that it was attempting to over-inflate the value of the program rather than provide meaningful benefits to inventors of green technologies.

First, the PTO overstated the benefits of the Green Technology Pilot Program by comparing the overall average wait time for green technologies with the average anticipated wait time under the pilot program. Such a comparison resembles comparing complex mathematical theorems to basic algebra. The overall average wait time is calculated based on applications spanning all different levels of complexity, not merely the most straightforward ones. The Green Technology Pilot Program has never been open to all applications. Rather, the Green Technology Pilot Program was limited to the simplest applications.<sup>147</sup> Like the revised Accelerated Examination program, the pilot program requires that qualifying applications

- (i) have three or fewer independent claims;
- (ii) have twenty or fewer total claims;
- (iii) have no multiple dependent claims;
- (iv) have claims drawn to a single invention, with the applicant agreeing in advance to make an election telephonically without traverse if the examiner finds that this condition is not met; and
- (v) be non-reissue, utility applications under 35 U.S.C. § 111(a) or an international application that has entered the national stage under 35 U.S.C. § 371.<sup>148</sup>

In addition to these joint restrictions, the Green Technology Pilot Program went a step further than the Accelerated Examination program by

- (i) excluding provisional applications;

---

<sup>145</sup> Other problems may have also played a role in inhibiting effective participation. For example, it is unclear if many inventors were even aware of the pilot program, as the PTO did not directly notify any parties about the program.

<sup>146</sup> See Press Release, PTO, *supra* note 113.

<sup>147</sup> See Pilot Program for Green Technologies Including Greenhouse Gas Reduction, 74 Fed. Reg. 64,666, 64,667 (Dec. 8, 2009).

<sup>148</sup> Compare *id.*, with MPEP, *supra* note 11, § 708.02(a)(I)(E)–(F).

- (ii) excluding reexaminations;
- (iii) excluding design applications;<sup>149</sup>
- (iv) originally limiting the program to pending applications;
- (v) capping the program to the first 3000 grantable petitions; and
- (vi) originally limiting the program to seventy-nine eligible patent classifications.<sup>150</sup>

While many of these restrictions were fairly benign and had only minimal impacts on the eligibility of applicants when considered individually, applications that satisfied all of the restrictions for eligibility in the pilot program were bound to take less time to review than the average application on a green technology due to their inherent simplicity, rather than due to any efforts by the PTO to expedite them. This laundry list of restrictions on eligibility can be directly contrasted with the UK IPO's influential Green Channel Initiative, which places no restrictions on the types of eligible applications other than the requirement that they "relate[ ] to a 'green' or environmentally-friendly technology."<sup>151</sup>

In all likelihood, many applicants did not investigate the accuracy of the PTO's claim that the patent review process would decrease by one year for green technologies. However, each inventor with a pending application has the opportunity to request an approximate estimate from the PTO of when his patent application may be reviewed under standard procedures.<sup>152</sup> This mechanism has given inventors the opportunity to learn for themselves that the anticipated "fast tracking" service available under the Green Technology Pilot Program was not that different from the wait they might otherwise anticipate.<sup>153</sup> Even if the PTO's statement that it would reduce the patent application process by one year were accurate, from the viewpoint of many inventors, such a difference is insufficient to justify the costs associated with hiring a lawyer to file a petition for expedited review and the risk that the petition would be dismissed or denied. This risk is quite appreciable. Close to half of the inventors who filed a petition for the Green Technology Pilot Program have had their petitions denied.<sup>154</sup>

---

<sup>149</sup> Compare 74 Fed. Reg. at 64,667, with MPEP, *supra* note 11, § 708.02(a)(I)(B).

<sup>150</sup> See 74 Fed. Reg. at 64,666–67.

<sup>151</sup> *Green Channel for Patent Applications*, UK IPO, <http://www.ipo.gov.uk/pro-types/pro-patent/p-law/p-pn/p-pn-green.htm> (last visited Jan. 5, 2012) (on file with the Harvard Law School Library).

<sup>152</sup> See Telephone Interview with Victor Cardona, Intellectual Prop. Attorney, Heslin Rothenberg Farley & Mesiti P.C. (Nov. 24, 2010).

<sup>153</sup> E-mail from Victor Cardona, Intellectual Property Attorney, Heslin Rothenberg Farley & Mesiti P.C., to Sarah Tran, Assistant Professor of Law, S. Methodist Univ. Sch. of Law (Feb. 27, 2011, 11:27 AM CST) (on file with author) (discussing how, after his client's initial rejection from the Green Technology Pilot Program, the client declined to challenge the decision even though the program had been opened to all technology classifications and the invention would probably have been accepted because the "timeline for receiving an office action under the regular procedures at that time . . . was not that different than if [they] applied for and were accepted into the greentech accelerated program").

<sup>154</sup> By December 5, 2011, only slightly over half of the petitions filed (58.7%) had been granted. See Green Petition, *supra* note 138.

Additionally, the PTO can review patent applications considerably faster than it proposed for the Green Technology Pilot Program. Under the revised Accelerated Examination program, which provides a suitable basis for comparison as it also contains a number of restrictions designed to weed out complicated applications, the PTO strives to give applicants a final decision within twelve months,<sup>155</sup> about a year less than it offers applicants for the Green Technology Pilot Program. While it could be argued that the reason the PTO can achieve this quick decision rate for the revised Accelerated Examination program is due to its prior art search requirement, a more significant factor appears to drive this discrepancy. Unlike applications proceeding via the Green Technology Pilot Program, which have only been accorded special status prior to the first Office Action,<sup>156</sup> under the revised Accelerated Examination program, each accepted application is placed on the examiner's special docket throughout its prosecution before the examiner.<sup>157</sup> Moreover, under its proposed three-track program, the PTO has indicated that applications filed under "Track I" of the program could be processed within one year without the completion of a prior art search.<sup>158</sup>

Significantly, other patent offices provide applicants with even shorter pendency periods than the PTO has provided for the revised Accelerated Examination program and do so without imposing onerous requirements on applicants. The UK IPO strives to grant patents on green technologies within nine months,<sup>159</sup> and KIPO, which lays claims to the fastest examinations in the world, made headlines in October of 2009 when the agency reported that it had completed an examination in less than a month.<sup>160</sup> The speed of fast-tracking efforts abroad highlights the inadequacies of a "fast"-tracking review program that strives to review applications within about two years.

---

<sup>155</sup> Press Release, PTO, *supra* note 92.

<sup>156</sup> Pilot Program for Green Technologies Including Greenhouse Gas Reduction, 74 Fed. Reg. 64,666, 64,666 (Dec. 8, 2009).

<sup>157</sup> *See id.*; *see also* Changes to Practice for Petitions in Patent Applications To Make Special and for Accelerated Examination, 71 Fed. Reg. 36,323, 36,324–25 (June 26, 2006) (describing the revised Accelerated Examination program requirements).

<sup>158</sup> *See* Enhanced Examination Timing Control Initiative; Notice of Public Meeting, 75 Fed. Reg. 31,763, 31,765–66 (June 4, 2010) (requesting comments on thirty-three questions regarding the Three-Track Examination Program).

<sup>159</sup> *See* Press Release, UK IPO, *supra* note 108 ("The green patents initiative will make it easier and faster for new products to reach the market. It could take only nine months to get a patent granted under this scheme, compared with the current average time of two-to-three years.").

<sup>160</sup> *See* Press Release, KIPO, *supra* note 20; *see also* NUTTER McCLENNEN & FISH LLP, *supra* note 20. One commentator has discovered that the KIPO program is limited primarily to inventions that have "received financial support or certification from the [Korean] government." Eric Lane, *KIPO Green Tech Fast Track Inaccessible for Most Applicants*, GREEN PATENT BLOG (Nov. 7, 2011), <http://www.greenpatentblog.com/2011/11/07/kipo-green-tech-fast-track-inaccessible-to-most-applicants/>. These restrictions limit the ability of American inventors and other non-Korean inventors to benefit from KIPO's expedited review program but may not impose a substantial burden on Korean inventors.

Thus, the successful implementation of the Green Technology Pilot Program has been hindered by the PTO's failure to offer tangible benefits to inventors who petition for eligibility. The ability of the PTO to expedite other applications within twelve months and the demonstrated desire and ability of other patent offices to provide more condensed review periods highlights the inadequacies of an "expedited" program that makes inventors wait about two years for a final decision. By offering applications involving socially valuable technologies opportunities for expedited review throughout their prosecution, as the PTO does for applications under its revised Accelerated Examination program, the PTO can better entice inventors to participate in future acceleration programs and bring valuable technologies to market in a timelier manner.<sup>161</sup>

## 2. *Barriers to Innovation*

Beyond the Green Technology Pilot Program's problematic barriers to participation, an even more troubling aspect of the program is that the PTO designed it in a manner that prevents it from providing incentives for the innovation of new green technologies. As a result, it only provides applicants with the ability to commercialize their inventions earlier. Although the benefits of earlier commercialization, such as enabling inventors to "secure funding, create businesses, and bring vital green technologies into use" sooner,<sup>162</sup> are important to inventors and the economy, the program's failure to promote innovation runs contrary to both greater social needs and public expectations.

An incentive to invent a new technology exists only if an inventor is aware of an opportunity that will benefit her as a result of the invention. The Green Technology Pilot Program did not create any such opportunities. The PTO may have feared that providing a new incentive for the innovation of green technologies would lead inventors to develop more technologies on which they would subsequently seek patents, resulting in the exacerbation of the PTO's backlog of pending applications.<sup>163</sup> The agency eliminated the program's potential to provide incentives for new innovation by restricting eligibility in the program to pending applications.<sup>164</sup> Even though the PTO later expanded the program to include applications filed after the initial pe-

---

<sup>161</sup> Several commentators have highlighted other mechanisms that could be used to reward green technologies in the patent system, including: the reduction, cancellation, or waiver of patent fees; the removal of green inventions from deferred examination; earlier publication and/or priority at the opposition and infringement stages; greater patent protection; and disclosure of information about the invention's environmental impact. *See* Derclaye, *supra* note 112, at 659 (describing the different mechanisms that have been proposed to green the patent system). It is beyond the scope of this Article to address these alternatives.

<sup>162</sup> *See* Press Release, PTO, *supra* note 113.

<sup>163</sup> *See* Pilot Program for Green Technologies Including Greenhouse Gas Reduction, 74 Fed. Reg. 64,666, 64,668 (Dec. 8, 2009) (expressing concerns about PTO's workload and available resources).

<sup>164</sup> *See id.* at 64,667.

riod ended,<sup>165</sup> the program still fails to provide an incentive for innovation as it is set to expire little more than a year after the expansion took effect. As the PTO is likely well aware, for many technologies, one year is insufficient time for an inventor to conceive of an idea, reduce it to practice, and prepare an application for the invention.

It is understandable that the PTO wants to reduce its backlog. The backlog represents a serious drain on the effectiveness of the agency as a whole.<sup>166</sup> But if the PTO's efforts to reduce its backlog have motivated it to design a program that does not contribute to innovation, the PTO is neglecting its higher regulatory priorities. Fostering innovation is one of the four central goals of the patent system. Specifically, the purpose of the patent system is to give inventors incentives to develop new technologies, to disclose their inventions to the public in such a manner that other inventors can take the next step forward, and to risk capital in their inventions.<sup>167</sup> If green technologies are truly "of fundamental importance to sustainable development as well as to the growth of our economy," as the PTO has indicated, encouraging their innovation should have been a goal to pursue, not to avoid.<sup>168</sup> This is especially true given the compelling social reasons for the institution of the Green Technology Pilot Program. By preventing the Green Technology Pilot Program from promoting the innovation of much-needed green technologies, the PTO's actions were antithetical to the rationale underlying the existence of the patent system (the promotion of public goals in exchange for a limited monopoly) and to the public need for the innovation of green technologies.

What is alarming is that few recognized and understood at the initiation of the Green Technology Pilot Program that it would not provide an incentive for innovation. Most astonishingly, even Secretary of Commerce Gary Locke, when announcing the program's initiation, misrepresented the nature of the program:

American competitiveness depends on innovation and innovation depends on creative Americans *developing new technology*. . . . By ensuring that many new products will receive patent protection more quickly, *we can encourage our brightest inventors to invest needed resources in developing new technologies* and help bring those technologies to market more quickly.<sup>169</sup>

---

<sup>165</sup> Expansion and Extension of the Green Technology Pilot Program, 75 Fed. Reg. 69,049, 69,050 (Nov. 10, 2010).

<sup>166</sup> See *supra* Part II.

<sup>167</sup> See John B. Campbell, Note, *What's the Deal Now? A Business Perspective Analysis of the U.S. Patent System and Recent Changes to Patent Laws*, 10 TEX. INTELL. PROP. L.J. 293, 297–301 (2002) (discussing at length the basic rationales of the patent system).

<sup>168</sup> Additionally, restricting the program to pending applications likely impeded the appeal of the program as the only inventors who were eligible were the ones who already had settled plans and expectations and were least likely to be motivated to apply for the program.

<sup>169</sup> See Press Release, PTO, *supra* note 113 (emphasis added).

These statements suggest that this senior official did not understand that the Green Technology Pilot Program would not provide incentives for innovation or the development of new technologies.<sup>170</sup> The PTO's Press Release for the initiation of the program also quoted Carl Horton, Chief Intellectual Property Counsel of General Electric, as failing to recognize this limitation on the program. He stated, "We hail this initiative as an excellent incentive to *fuel further innovation of clean technology* and a terrific mechanism to speed the dissemination of these patented technologies throughout the world."<sup>171</sup> But unless the program is institutionalized into some long-term or permanent form that would enable inventors to gain a reward for their investment of time and resources in inventing green technologies, the program cannot be expected to "fuel further innovation."

The PTO's failure to promote the innovation of green technologies suggests an inability to fulfill and prioritize its regulatory responsibilities. When the PTO takes steps to address its backlog problem in the future, it needs to do so without overlooking its constitutional responsibility to promote the innovation of technologies that further public goals.

### B. *Objections*

Implementing preferential treatment in the patent review process provokes two normative objections: (1) the PTO is incapable of defining "green technologies" in such a way as to limit unpredictable and inconsistent determinations of eligibility as well as excess free riding by inventions with little environmental benefit, and (2) it is unfair for the PTO to treat one category of inventors more favorably at the expense of all other inventors, who must wait longer for their applications to be reviewed. In light of the theoretical goals of the patent system and existing mechanisms the PTO has in place to ameliorate these concerns, both of these objections can be largely overcome. Nonetheless, greater collaboration between the PTO and other agencies or heightened PTO expertise in key areas could further extinguish these concerns.

#### 1. *Definitional*

Before granting a class of socially valuable technologies preferential treatment, it is necessary to define which technologies are eligible for such treatment. If the definition is too restrictive, it will exclude beneficial technologies from eligibility.<sup>172</sup> On the other hand, if the definition is too broad

---

<sup>170</sup> It is worth noting that the Secretary's prepared statements did not include these remarks. See Locke, Remarks at Announcement, *supra* note 121.

<sup>171</sup> See Press Release, PTO, *supra* note 113 (emphasis added).

<sup>172</sup> This was one of the early problems with the Green Technology Pilot Program. See *supra* Part II.B.



it will allow for excessive free riding by inventions of little social worth.<sup>173</sup> Critics of any efforts by the PTO to define socially valuable patent applications could point out that individual patent examiners may not share the same views of which inventions deserve special attention, resulting in inconsistent and unpredictable results. The possibility that patent examiners would come to different conclusions as to whether a given patent application relates to a “green technology” highlights the fact that it is not immediately apparent what makes a technology “green.” The adjective “green” is commonly appended to many terms ranging from marketing, technology, and buildings, to household products and even lifestyles. The word is ubiquitous and implies broadly that something is “environmentally friendly,” “recyclable,” “biodegradable,” or “energy efficient.”<sup>174</sup> Notably, some commercial industries have already embraced extensive rules and regulations in an attempt to quantify various degrees of “green.”<sup>175</sup> A number of federal entities have also begun to propose definitions for “green” terms.<sup>176</sup> For example, the phrase “green technology products” has recently been defined by the Office of the United States Trade Representative as:

products used to produce renewable energy or reduce the emissions associated with the production and use of energy. These are the products necessary to produce energy from wind, solar, biomass, geothermal, hydro, and nuclear resources, products to enable the production of energy from coal with fewer greenhouse gas emissions, and products that consume less energy or alternative sources of energy, such as energy-efficient vehicles and energy-efficient lighting.<sup>177</sup>

Rather than rely on an existing definition of “green,” the PTO chose to define the term itself. For purposes of the Green Technology Pilot Program,

---

<sup>173</sup> For instance, a new coffee cup designed for cockpits could theoretically keep pilots awake and therefore less likely to crash their planes into the ocean and could ultimately prevent the release of toxic chemicals into sensitive waters. But the environmental benefits of such an invention are highly attenuated and thus render such an application unsuitable for expedited treatment.

<sup>174</sup> See Roger D. Wynne, *Defining “Green”: Toward Regulation of Environmental Marketing Claims*, 24 U. MICH. J.L. REFORM 785, 786 (1991).

<sup>175</sup> See, e.g., Les Lo Baugh, *LEED® Green Building Incentives*, in *Green Real Estate Summit 2008: What Attorneys, Developers, Bankers and Regulators Need to Know*, 23, 25 in *REAL ESTATE LAW AND PRACTICE COURSE HANDBOOK SERIES* (2008); see also Mary Jane Augustine, *Project Owner Strategies for “Greening” Design and Construction Contracts*, in *The Green Real Estate Summit 2009: What Attorneys, Developers, Bankers and Lenders Need to Know*, at 121, in *REAL ESTATE LAW AND PRACTICE COURSE HANDBOOK SERIES* (2010).

<sup>176</sup> See, e.g., Notice of Solicitation of Comments, 75 Fed. Reg. 12,571, 12,573 (March 16, 2010) (acknowledging that government, academia, and the business community define “green jobs” differently and also listing widely used definitions of the term).

<sup>177</sup> See Initiation of Section 302 Investigation and Request for Public Comment: China — Acts, Policies and Practices Affecting Trade and Investment in Green Technology, 75 Fed. Reg. 64,776, 64,776 (Oct. 20, 2010). The Office of the United States Trade Representative used this definition to set the parameters for an investigation of Chinese trade practices. The definition has the potential to be recognized by the global community as a definition of “green technology” for future treaties and negotiations.

the PTO defined green technologies broadly as those inventions that “materially enhance[ ] the quality of the environment, or that materially contribute[ ] to: (1) The discovery or development of renewable energy resources; (2) the more efficient utilization and conservation of energy resources; or (3) greenhouse gas emission reduction.”<sup>178</sup> Although this definition of green technology is somewhat vague, several factors reduce, but do not completely eliminate, the risk of improper eligibility determinations.

Most significantly, and contrary to what might be expected, the decision as to whether or not an application is drawn to a “green technology” is not made by individual patent examiners. Rather, it is made on a case-by-case basis by Supervisory Program Examiners in each individual Technology Center at the PTO.<sup>179</sup> While the number of patent examiners totals in the thousands,<sup>180</sup> there is only one Supervisory Program Examiner in each of the eight Technology Centers. These eight individuals have received the same training on the standards for determining the eligibility of petitions for special status “[t]o ensure uniformity to the maximum extent possible.”<sup>181</sup> Given the small number of these specialized and highly trained Supervisory Program Examiners, the likelihood that patent applicants would receive inconsistent determinations as to eligibility is likely negligible.

In addition, the use of a materiality standard ameliorates the concern that the Supervisory Program Examiners could make unpredictable decisions as to eligibility due to their inability to anticipate *ex ante* what environmental benefits a particular invention will produce. The requirement that an invention “materially” benefit the environment appears to achieve the appropriate balance between maximizing the social benefits that derive from a broad definition for eligibility and preventing excessive free riding by inventions of little social worth. As the PTO has explained:

The materiality standard does not permit an applicant to speculate as to how a hypothetical end-user might specially apply the invention. . . . Nor does such standard permit an applicant to enjoy the benefit of advanced examination merely because some minor aspect of the claimed invention may [be directed to one of the grounds for special status].<sup>182</sup>

---

<sup>178</sup> See Pilot Program for Green Technologies Including Greenhouse Gas Reduction, 74 Fed. Reg. 64,666, 64,667 (Dec. 8, 2009).

<sup>179</sup> See Telephone Interview by Randall Beane with Manjunath Rao, Supervisory Patent Examiner, Art Unit 1656, PTO (Aug. 12, 2010) (explaining that the guidelines for the revised Accelerated Examination program have been followed in the implementation of the Green Technology Pilot Program with respect to who is responsible for deciding whether a petition is eligible for fast-tracked review); see also PTO, GUIDELINES, *supra* note 95, at 6.

<sup>180</sup> See PTO, PERFORMANCE AND ACCOUNTABILITY REPORT FISCAL YEAR 2010, at 9 (2010), available at <http://www.uspto.gov/about/stratplan/ar/2010/USPTOFY2010PAR.pdf> (“At the end of fiscal year (FY) 2010, the USPTO work force was composed of . . . 6,225 patent examiners . . .”).

<sup>181</sup> See PTO, GUIDELINES, *supra* note 95, at 6.

<sup>182</sup> See 74 Fed. Reg. at 64,667; see also MPEP, *supra* note 11, § 708.02(V).

As a result, the materiality standard serves as a policing mechanism to ensure that inventions that have only tangential or speculative effects on the environment cannot avail themselves of special status. At the same time, it is sufficiently broad to cover a wide spectrum of technologies.<sup>183</sup>

Finally, the PTO has reduced the ambiguity inherent in its definition of green technologies by providing guidance on three terms from its definition. The agency explained that the term “renewable energy resources” includes “hydroelectric, solar, wind, renewable biomass, landfill gas, ocean (including tidal, wave, current, and thermal), geothermal, and municipal solid waste, as well as the transmission, distribution, or other services directly used in providing electrical energy from these sources.”<sup>184</sup> With regard to technologies that would produce “more efficient utilization and conservation of energy resources,” the PTO specified that “inventions relating to the reduction of energy consumption in combustion systems, industrial equipment, and household appliances” would be eligible.<sup>185</sup> Finally, it clarified that “the reduction of greenhouse gases. . . would include, but is not limited to, inventions that contribute to (1) advances in nuclear power generation technology, or (2) fossil fuel power generation or industrial processes with greenhouse gas-abatement technology (e.g., inventions that significantly improve safety and reliability of such technologies).”<sup>186</sup> These examples help the PTO decision makers, as well as applicants, understand the boundaries of eligibility for the Green Technology Pilot Program.

Although these mechanisms reduce the likelihood that the PTO has made inappropriate determinations of eligibility, the PTO’s ability to restrain undesirable free riding completely is hindered by the limitations on its regulatory capabilities. Unlike regulatory bodies overseas, the PTO does not consider policy concerns, such as the safety or efficacy of technologies, when it evaluates whether to grant a patent for an invention.<sup>187</sup> Moreover,

---

<sup>183</sup> This limitation on the scope of the program represents an improvement over some terms used by overseas patent offices, such as the UK IPO, that have allowed patent applications with any environmental benefit, whether significant or not, to receive expedited treatment. *See, e.g.*, Press Release, UK IPO, *supra* note 108 (requiring only that eligible patent applications have “some” environmental benefit); *Green Channel: Frequently Asked Questions*, UK IPO, <http://www.ipo.gov.uk/types/patent/p-applying/p-after/p-green/p-green-faq.htm> (last visited Jan. 5, 2012) (on file with the Harvard Law School Library) (“There is no specific environmental standard to meet in order to benefit from the Green Channel.”). It is virtually certain that applicants with inventions of questionable environmental value will take advantage of the low threshold for eligibility that these programs offer, creating a problem of excessive free riding by inventions that the programs were not intended to benefit.

<sup>184</sup> *See* 74 Fed. Reg. at 64,667.

<sup>185</sup> *See id.*

<sup>186</sup> *See id.*

<sup>187</sup> *Compare* 35 U.S.C. § 101 (2006) (defining patentable subject matter in the United States as “any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof”), *with* European Patent Convention, art. 53(a), Oct. 5, 1973, 1065 U.N.T.S. 199 (revised at the Convention on the Grant of European Patents Nov. 29, 2000), *available at* <http://www.epo.org/law-practice/legal-texts/html/epc/2010/e/ma1.html> (requiring that an invention not be “contrary to ordre public or morality”), *and* Andean Community Decision 486: Common Intellectual Property Regime art. 20(b), Dec. 1, 2000, *available at* <http://www.sice.oas.org/Trade/Junac/Decisiones/DEC486ae.asp#tit2> (allowing no

the courts have construed the Patent Office's powers as limited to procedural, but not substantive, rulemaking, unlike the authority of the EPA, the Federal Communications Commission, and other U.S. agencies that regulate in complex, technical areas.<sup>188</sup> The PTO thus has not developed the expertise to know whether the benefits of a particular technology are offset by its detrimental impacts on society. To illustrate, the PTO considers energy generated by hydroelectric facilities to be renewable energy<sup>189</sup> because dams do not contribute to global warming. However, hydroelectric facilities have been the frequent subject of attacks by environmentalists due to their negative effects on stream flow and wildlife.<sup>190</sup> The Federal Energy Regulatory Commission ("FERC"), which has authority over most hydroelectric facilities pursuant to section 23(b)(1) of the Federal Power Act,<sup>191</sup> would be better equipped to weigh these competing environmental impacts than the PTO. Perhaps, after reviewing the potential benefits and adverse implications of using hydroelectric facilities, FERC would indicate that our energy needs demand further innovation of all types of energy resources, including hydroelectric facilities. But unless the PTO seeks out the other agency's advice or develops better in-house expertise, it is unlikely that it will make an informed decision. If the PTO chooses to develop its institutional expertise, the time and effort the PTO invests in increasing its expertise could exacerbate its backlog. However, as the PTO's institutional competence grows, it would improve its efficiency and better target key technologies, resulting in net benefits for the backlog and patent system.

Given the small number of specialized examiners who are charged with making eligibility determinations, the materiality standard that reduces excessive free riding by inventions of little anticipated environmental worth, and the PTO's explicit guidance on eligible technologies, it seems unlikely that inconsistent or unpredictable determinations of eligibility would be made by the PTO. This unevenness is true despite the PTO's use of a broad definition for "green technologies." Nonetheless, the PTO's inability to

---

patents that exploit "human or animal life or health" to "avoid serious prejudice to plant life and the environment"). See also Timothy R. Howe, *Patentability of Pioneering Pharmaceuticals, What's the Use?*, 32 SAN DIEGO L. REV. 819, 826 (1995) ("The Federal Circuit has also explained that safety and effectiveness, per se, are not concerns of the PTO.").

<sup>188</sup> See *Tafas v. Doll*, 559 F.3d 1345, 1354 (Fed. Cir. 2009); *Merck & Co. v. Kessler*, 80 F.3d 1543, 1549–50 (Fed. Cir. 1996) ("[T]he broadest of the [Patent Office's] rulemaking powers . . . does NOT grant the Commissioner the authority to issue substantive rules." (quoting *Animal Legal Def. Fund v. Quigg*, 932 F.2d 920, 930 (Fed. Cir. 1991))); Stuart Minor Benjamin & Arti K. Rai, *Who's Afraid of the APA? What the Patent System Can Learn from Administrative Law*, 95 Geo. L.J. 269, 271 (2007).

<sup>189</sup> See 74 Fed. Reg. at 64,667 (specifying that hydroelectric projects fall within the meaning of "renewable energy resources").

<sup>190</sup> See, e.g., *Edward's Mfg. Co. & City of Augusta, Me., Order Denying New License & Requiring Dam Removal*, 81 F.E.R.C. 61,255 (1997) (ordering a dam removed after concluding "that the project's negative impacts on fishery resources could not be mitigated except by removal of the dam"); *Merimil Ltd. P' ship, Project No. 2574-032, Order Issuing New License*, 110 F.E.R.C. 61,240 (2005) (rejecting arguments that a dam should be removed to allow for restoration of fish runs).

<sup>191</sup> 16 U.S.C. §§ 791(a)–825(r) (2006).

consider the safety and efficacy of technologies could allow for the expedited review of applications that will have a net detrimental impact on the environment or on other social interests. To avoid this problem in the future, the PTO should either focus on developing greater expertise in key areas or collaborate with other agencies to better target the technologies that optimize the social benefits of an expedited review process.

## 2. *Fairness*

Beyond definitional concerns, the PTO's Green Technology Pilot Program could potentially be seen as raising fairness concerns. Anytime the Patent Office grants preferential treatment to one class of inventors, as it did with this pilot program, someone must shoulder the burden such privileged status creates. The burden could have been allocated to the general public if the PTO had hired new patent examiners or made other expenditures to accommodate its increased workload. Alternatively, the burden could have been allocated to the parties seeking expedited review by requiring that the applicants seeking preferential treatment do a portion of the PTO's job or pay fees to cover the PTO's expenses, as the PTO has done with its revised Accelerated Examination program and proposed three-track program.<sup>192</sup> Instead the PTO chose to spread the burden among all of the other applicants in the system by making them wait longer for their chance at review. As shall be seen, this final option represents the only practicable option for promoting the innovation and development of socially valuable technologies.

In an ideal world, the general public would bear the burden of a program that benefits society as a whole. But allocating the burden to the general public is easier said than done. Relying exclusively on capital-intensive actions, such as increased financial expenditures by the PTO, is neither a politically acceptable nor economically sound course of action at this time. It is widely recognized that the PTO lacks adequate resources to perform its most basic task of processing patent applications.<sup>193</sup> And although Congress recently gave the PTO fee-setting authority,<sup>194</sup> the United States' current economic situation limits the PTO's ability to raise fees to subsidize a limited group of patent applications. A financial crisis, followed by a recession, has crippled many nations and has left the United States with an unemployment rate of about nine percent in November of 2011.<sup>195</sup> As a result, federal regulatory agencies in the United States face an undesirable predicament. They are increasingly being tasked with finding new ways to ameliorate the nation's energy problems, but are being heavily criticized when doing so in-

---

<sup>192</sup> See, e.g., MPEP, *supra* note 11, § 708.02(a)(1).

<sup>193</sup> Robert D. Atkinson & Daniel D. Castro, *A National Technology Agenda for the New Administration*, 11 YALE J.L. & TECH. 190, 192 (2009).

<sup>194</sup> See America Invents Act, Pub. L. No. 112-29, § 10 (2011).

<sup>195</sup> See BUREAU OF LABOR STATISTICS, U.S. DEP'T OF LABOR, THE EMPLOYMENT SITUATION – NOVEMBER 2011, at 1 (2011), available at <http://www.bls.gov/news.release/pdf/emp/sit.pdf> (indicating that the unemployment rate was 8.6% in November of 2011).

creases the strain on the economy.<sup>196</sup> The PTO would be wise to steer clear of any such controversies.

Given the PTO's limited funds, placing the burden on the parties seeking or benefiting from expedited treatment seems like a logical alternative. Imposing a burden on applicants for the revised Accelerated Examination program helps justify a program that does not discriminate on the basis of social worth. Specifically, because the revised Accelerated Examination program is open to all applicants, not merely those with socially valuable applications, there was no compelling reason to grant applicants opportunities for accelerated review when doing so meant that other applicants might have to wait longer for their turn for review. To resolve this problem, the PTO instituted a quid pro quo as a fairness measure to justify the existence of mechanisms that enable applicants to jump to the front of the examination line.<sup>197</sup> With the revised Accelerated Examination program, this quid pro quo takes the form of the pre-examination search and ESD requirements.<sup>198</sup>

When the PTO expedites applications of particular social value, the concept of requiring a quid pro quo becomes socially indefensible in light of the constitutional goals of the patent system. The authors of the U.S. Constitution designed the patent system to promote "the Progress of Science and useful Arts" for the benefit of the general public in exchange for an inventor's ability to hold the exclusive rights to an invention for a limited time.<sup>199</sup> Inventions of high social value are inherently predestined to create the greatest benefits for society and thereby fulfill this constitutional bargain better than inventions of little social worth. Because of the rewards that socially valuable inventions create, they deserve the highest priority in being processed through the patent system. Imposing burdens on these applicants serves as a barrier to the innovation and development of these valuable tech-

---

<sup>196</sup> For instance, the Supreme Court in *Massachusetts v. EPA*, 549 U.S. 497, 532 (2007), concluded that the EPA has the jurisdiction to regulate carbon dioxide as a greenhouse gas pollutant and chastised the agency for failing to do so. However, Republicans gained control of the U.S. House of Representatives, as well as several seats in the Democratic-controlled Senate, in the fall of 2010 in part by campaigning to block the implementation of the EPA's new regulations on the ground that they stifled the economy. Gabriel Nelson, *Republican Victories Boost Effort to Block EPA's Climate Rules*, N.Y. TIMES, Nov. 3, 2010, <http://www.nytimes.com/gwire/2010/11/03/03greenwire-republican-victories-boost-effort-to-block-epa-72986.html>; see also *Reducing the US Carbon Footprint, Toe by Toe*, CHRISTIAN SCI. MONITOR, June 30, 2010, <http://www.csmonitor.com/Commentary/the-monitors-view/2010/0630/Reducing-the-US-carbon-footprint-toe-by-toe> (stating that bold moves on climate change, such as carbon taxes, caps on greenhouse gas emissions, or targets to cut atmospheric carbon levels have been postponed due to a high unemployment rate and upcoming elections); Murray, *supra* note 27.

<sup>197</sup> See Telephone Interview with Pinchus M. Laufer, Sr. Legal Advisor, PTO (Nov. 15, 2010) (discussing how applicants using the PTO's revised Accelerated Examination must fulfill its requirements as a quid pro quo for receiving the benefit of earlier processing of their applications).

<sup>198</sup> Similarly, with the proposed three-track program, the quid pro quo takes the form of increased fees for applicants who seek expedited processing of their applications.

<sup>199</sup> U.S. CONST. art. I, § 8, cl. 8 (granting Congress the power "[t]o promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries").

nologies and therefore cannot be justified. Indeed, the onerous and risk-laden requirements of the revised Accelerated Examination program have reduced the incentives for those with socially valuable applications to seek expedited review.<sup>200</sup> As a result, instead of providing more opportunities for inventions of critical social value to be expedited, the revised Accelerated Examination program provides fewer.<sup>201</sup>

Any potential fairness concerns associated with placing the burden on applicants who do not have socially valuable technologies are further mitigated by the existence of procedural mechanisms that aid these applicants. First of all, if a party urgently needed an application reviewed in a timely manner but was ineligible for preferential treatment on the basis of the anticipated social value of his or her application, the applicant could use the revised Accelerated Examination program to receive a final decision in less than one year. Additionally, Congress has enacted legislation that lengthens the term of a patent for those patent owners who experience long delays in the processing of their applications.<sup>202</sup> It is unlikely that many applicants would experience such delays as a direct result of a program to expedite socially valuable technologies, though, as the number of applications that could potentially be expedited is small relative to the overall number of applications in the system. The PTO anticipated that over 500,000 new applications would be filed in 2010.<sup>203</sup> In comparison, the PTO capped its Green Technology Pilot Program at a mere 3000 applications for a two-year period. This number is equivalent to less than 0.3% of the PTO's applications for the same period. Even if the PTO greatly expanded the Green Technology Pilot Program and created new opportunities for other socially valuable applications to receive expedited review, the number of these applications would remain far less than the total pool of applications. If the PTO used a materiality standard in these future programs and improved its ability to target the highest priority applications, the PTO could further reduce the burden on other parties. Spreading the delay among the other applicants would thus likely result in a negligible increase in delay. If the program did start to overwhelm the PTO, the PTO could always rein it in by imposing an annual limit on the number of applications prosecuted under the program.

In summary, the most fair and effective way for the PTO to allocate the burden for programs that expedite the processing of game-changing technol-

---

<sup>200</sup> See *supra* Part II.A.

<sup>201</sup> To a degree, the revised Accelerated Examination program represents a worst-case example. Under this program, applicants receive their patents sooner, but a patent granted under this program, which is susceptible to being declared invalid due to inequitable conduct, has less worth than one otherwise reviewed. Thus, the program weakens the property interest patent applicants receive and further dilutes any incentives applicants could have for innovation and development of inventions.

<sup>202</sup> See 35 U.S.C. §§ 154–156 (2006).

<sup>203</sup> See PTO, *supra* note 180, at 53 (showing that 445,613 applications were filed in fiscal year 2006, 468,330 applications were filed in fiscal year 2007, 496,886 applications were filed in fiscal year 2008, 486,499 applications were filed in fiscal year 2009, and estimating that 509,367 applications would be filed in fiscal year 2010).

ogies is to distribute it among the other applicants in the system. Recent economic challenges have made allocating the burden to the public politically suicidal for the PTO, and placing a quid pro quo on the parties that could potentially bring valuable technologies to market would only serve to obstruct the full beneficial participation by applicants with these technologies.

#### IV. LESSONS LEARNED

Beyond demonstrating that it makes sense for the PTO to accelerate the review of socially valuable applications, this Article's analysis of the practical and theoretical implications of the PTO's Green Technology Pilot Program also highlighted important lessons for reform. The PTO does not need to start with a clean slate. Rather, the agency can use the Green Technology Pilot Program as a platform to expand the opportunities for expedited review to other types of socially valuable patent applications. By using the Green Technology Pilot Program as a model for widespread adoption of permanent programs that target high priority areas, while also recognizing the shortcomings of this pilot program, the PTO can help the United States surge forward and better optimize the fundamental patent bargain.

##### *Lesson 1: Improving Effectiveness*

Any claims by the PTO that it is expanding the opportunities for socially valuable technologies to receive accelerated review should be treated skeptically.<sup>204</sup> Unless the PTO provides meaningful benefits to inventors who avail themselves of a new program for accelerated patent application processing, it may merely be creating such programs to pay lip service to social goals without providing real aid to the inventors of these technologies. Indeed, the PTO has hindered full participation in the Green Technology Pilot Program by failing to offer meaningful benefits to inventors who petition for eligibility and by imposing excessive restrictions on eligibility and applying them arbitrarily, suggesting that the PTO was primarily concerned with greenwashing itself rather than aiding the green industry. By offering applications involving socially valuable technologies opportunities for expedited review throughout their prosecution, as the PTO does for applications under its revised Accelerated Examination program, the PTO can create a more tangible enticement to inventors to seek accelerated review and bring these key technologies to market in a timely manner. The goal should be to reduce patent pendency to a matter of months, not a matter of years.

##### *Lesson 2: Innovating the Future*

---

<sup>204</sup> History has shown that the PTO has lessened the opportunities for such beneficial applications to receive accelerated review when it claimed to be providing more. *See supra* Part II.A (describing how the implementation of the revised Accelerated Examination program replaced many of the opportunities for socially beneficial applications, like those benefiting cancer and HIV/AIDS research, to receive fast tracked processing with a substantially more onerous and risky procedure).



In implementing the Green Technology Pilot Program, the PTO's failure to promote innovation, a fundamental goal of the patent system,<sup>205</sup> holds potentially ominous implications. The risk arises that the PTO has become so focused on its backlog, rather than on the purposes of the patent system, that it will use the Green Technology Pilot Program as a model for implementing other programs that lower its backlog but do nothing to further society's interest in the innovation of priority technologies. But innovation, not just quicker commercialization of existing inventions, is needed to help the United States overcome its most pressing problems.

To rectify this deficiency in the future, the PTO should not limit accelerated examination programs to pending applications. Just as significantly, the PTO should make the opportunities for accelerated review last sufficiently long for an inventor to conceive of an idea, reduce it to practice, and prepare an application for it. While permanent regulations would create greater incentives for innovation than temporary programs, even a time-limited program could give inventors an incentive to invent new beneficial technologies if the PTO provides the inventors with adequate notice of the opportunity for expedited review from the outset of the program.<sup>206</sup>

### *Lesson 3: Defining Social Value*

In order to implement a program that treats specific classes of technologies preferentially, the PTO must specify which technologies are socially valuable. The PTO's approach of using a broad definition of eligible technologies, which allows a wide spectrum of potentially advantageous inventions to get to market more quickly, policed by a materiality standard, clarified with examples, and implemented by only eight special program examiners, represents a generally sound approach. This approach minimizes the possibility of unpredictable or inconsistent eligibility determinations. However, the PTO's lack of experience weighing policy considerations, like the safety and effectiveness of different technologies or the relative benefits to society of the technologies, could create a loophole through which applications with greater detrimental impacts on society than beneficial impacts could avail themselves of expedited review. By actively collaborating with other agencies or developing heightened expertise in a few key areas and by relying on Presidential declarations of what constitutes a socially valuable technology, the PTO could better select and more narrowly define the categories of inventions that are eligible for expedited review.<sup>207</sup> This would lessen the potential for free riding by less socially valuable applications, quell fairness concerns, and improve the coordination and technological understanding of all participating agencies.

---

<sup>205</sup> See Campbell, *supra* note 167.

<sup>206</sup> The appropriate length of time would depend on the industry being advanced and national needs.

<sup>207</sup> Further examination of mechanisms that could improve the PTO's policymaking capabilities is beyond the scope of this Article, but I intend to explore this issue in greater depth at a future time.

The PTO possesses procedures that allow for greater collaboration between agencies. Pursuant to 37 C.F.R. § 1.102(b), applications may be expedited if “the inventions are deemed of peculiar importance to some branch of the public service and the head of some department of the Government requests immediate action for that reason.”<sup>208</sup> Although this provision has been seldom used and has not been exempted from the onerous burdens of the PTO’s revised Accelerated Examination program,<sup>209</sup> this could change. Congress could require other agencies to periodically advise the PTO as to high-priority technologies that deserve expedited review. Alternatively, in the absence of Congressional action, the PTO could take the initiative to ask other agencies for their recommendations or work to develop its expertise in areas of high priority.

#### CONCLUSION

No one knows the precise value that can be realized if the Patent Office prioritizes the review of socially valuable patent applications. But the possibility remains that certain applications are sitting in the PTO’s backlog that could ameliorate our immediate economic troubles and help position the United States as a leader in key industries, such as biomedical research, information technology, and clean energy, before this nation falls too far behind its overseas competitors. Foreign patent offices are already providing meaningful opportunities for the expedited processing of clean energy patent applications.<sup>210</sup> Their programs are faster and less restrictive than the Green Technology Pilot Program.<sup>211</sup> Perhaps more significantly, unlike the PTO’s program, these programs have been implemented in forms that provide opportunities for the innovation of new green technologies, not just the commercialization of existing inventions.

At a time when economic recovery in the United States has been “painfully slow,”<sup>212</sup> the ability of the PTO to ameliorate the nation’s high unem-

---

<sup>208</sup> 37 C.F.R. § 1.102(b) (2010). In 1987, President Ronald Reagan deemed patent applications relating to superconductivity to carry such peculiar importance to the nation, and he directed the PTO to “speed up the patent process so that it can keep pace with the fast-paced world of high technology.” President Ronald Reagan, Remarks at the Federal Conference on Commercial Applications of Superconductivity (July 28, 1987) (transcript available at <http://www.reagan.utexas.edu/archives/speeches/1987/072887a.htm>). In accordance with this mandate, the PTO granted special status to patent applications involving superconductivity technologies when requested by applicants. See MPEP, *supra* note 11, § 708.02(IX). Such requests must now comply with the revised Accelerated Examination program. See *id.* § 708.02(a).

<sup>209</sup> See MPEP, *supra* note 11, § 708.02(a).

<sup>210</sup> See *supra* Part II.B.

<sup>211</sup> See *supra* Part II.B.

<sup>212</sup> See Susan Decker, *Patent Chief Kappos ‘On the Hunt’ to Reduce U.S. Backlog, Spur Innovation*, BLOOMBERG.COM, Sept. 8, 2010, <http://www.bloomberg.com/news/2010-09-09/patent-chief-kappos-on-the-hunt-to-reduce-u-s-backlog-spur-innovation.html> (discussing how President Obama called for incentives to promote American ingenuity as part of his measures to create jobs and expand productivity).

ployment rate by expediting the review of technologies that satisfy urgent public needs cannot be underscored enough. The potential benefits to society of accelerating such applications are immense. The PTO can encourage more investment in the innovation and development of socially valuable technologies while creating economic benefits and filling a regulatory gap. These public rewards further the constitutional patent bargain that justifies the very existence of the patent system: the grant of a patent to an inventor in exchange for the benefit to society of the promotion of “the Progress of Science and useful Arts.”<sup>213</sup> Indeed, as Senator Robert Menendez, the author of an important amendment to the America Invents Act, recently declared, prioritizing technologies of national importance in the patent system is a “good commonsense policy that can help America propel forward in the 21st century.”<sup>214</sup>

---

<sup>213</sup> U.S. CONST. art. I, § 8, cl. 8.

<sup>214</sup> See 157 Cong. Rec. S1052–53 (daily ed. Mar. 1, 2011) (Amendment No. 24 and statement of Sen. Robert Menendez) (applauding the PTO for prioritizing green technologies in the review process); see also America Invents Act, Pub. L. No. 112-29, § 25 (2011) (granting the PTO a new power to prioritize important technologies).

## APPENDIX I

**Original List of Eligible Classifications for Green Technology  
Pilot Program**

	USPC	Brief Description
<i>Alternative Energy Production</i>		
1.	44/589	Agricultural waste
2.	44/605; 44/589	Biofuel
3.	110/235-259, 346	Chemical waste
4.	126/634-680	For domestic hot water systems
5.	52/173.3	For passive space heating
6.	126/561-568	For swimming pools
7.	429/12-46	Fuel cell
8.	44/605	Fuel from animal waste and crop residues
9.	48/197R, 197A	Gasification
10.	435/252.3-252.35, 254.11-254.9, 257.2, 325-408, 410-431	Genetically engineered organism
11.	60/641.2-641.5; 436/25-33	Geothermal
12.	75/958; 431/5	Harnessing energy from man-made waste
13.	110/235-259, 346	Hospital waste
14.	405/76-78; 60/495-507; 415/25	Hydroelectric
15.	110/235-259, 346	Industrial waste
16.	210/605	Industrial waste anaerobic digestion
17.	44/589; 44/606	Industrial wood waste
18.	290/51, 54; 60/495-507	Inertial (e.g., turbine)
19.	431/5	Landfill gas
20.	44/552	Municipal waste
21.	376/all	Nuclear power—induced nuclear reactions: processes, systems, and elements
22.	60/203.1	Nuclear power—reaction motor with electric, nuclear, or radiated energy fluid heating means
23.	60/644.1; 136/243-265	Nuclear power—heating motive fluid by nuclear energy; photovoltaic
24.	44/552	Refuse-derived fuel
25.	438/57, 82, 84, 85, 86, 90, 93, 94, 96, 97	Solar cells
26.	126/561-714; 320/101	Solar energy
27.	126/561-713; 60/641.8-641.15	Solar thermal energy
28.	405/76-78; 60/495-507	Water level (e.g., wave or tide)
29.	290/44, 55; 307/64-66, 82-87; 415/2.1	Wind

<b><i>Energy Conservation</i></b>		
30.	180/2.1-2.2, 54.1	Alternative-power vehicle (e.g., hydrogen)
31.	315/150, 151, 199	Cathode ray tube circuits
32.	705/13	Commuting (e.g., HOV, teleworking)
33.	105/1.1-1.3; 296/180.1-180.5; 296/181.5	Drag reduction
34.	313/498-512, 567-643	Electric lamp and discharge devices
35.	180/65.1; 180/65.21; 320/109; 701/22; 310/1-310	Electric vehicle
36.	705/35-45	Emission trading (e.g., pollution credits)
37.	307/38-41; 700/295-298; 713/300-340	Energy storage or distribution
38.	180/65.21; 180/65.31	Fuel cell-powered vehicles
39.	180/205; 280/200-304.5	Human-powered vehicle
40.	180/65.21-65.29; 73/35.01-35.13, 112-115, 116-119A, 121-132	Hybrid-powered vehicle
41.	257/79, 82, 88-90, 93, 99-103	Incoherent light emitter structure
42.	105/49-61; 180/65.1-65.8	Land vehicle (e.g., electric trains, electric cars)
43.	359/591-598	Optical systems and elements
44.	404/32-46	Roadway (e.g., recycled surface, all-weather bikeways)
45.	52/309.1-309.17, 404.1-404.5, 424-442, 783.1-795.1	Static structures
46.	702/130-136	Thermal
47.	361/19, 20, 141, 152, 218	Transportation
48.	440/6-7	Watercraft drive (electric powered)
49.	440/21-32	Watercraft drive (human powered)
50.	440/9	Wave-powered boat motors
51.	440/8	Wind-powered boat motors
52.	114/102.1-115	Wind-powered ships
<b><i>Environmentally Friendly Farming</i></b>		
53.	405/36-51	Alternative irrigation technique
54.	210/610-611; 71/11-30	Animal waste disposal or recycling
55.	71/8-30	Fertilizer alternative (e.g., composting)
56.	405/15	Pollution abatement, soil conservation
57.	137/78.2-78.3; 137/115.01-115.28	Water conservation
58.	504	Yield enhancement

<i>Environmental Purification, Protection, or Remediation</i>		
59.	383/1; 523/124-128; 525/938; 526/914	Biodegradable
60.	588/249-249.5	Bio-hazard, disease (permanent containment of malicious virus, bacteria, prion)
61.	588/299	Bio-hazard, disease (destruction of malicious virus, bacteria, prion)
62.	95/139-140; 405/129.1-129.95; 423/220-234	Carbon capture or sequestration
63.	405/129.1-129.95	Disaster (e.g., spill, explosion, containment, or cleanup)
64.	252/71-79	Environmentally friendly coolants, refrigerants, etc.
65.	422/1-43	Genetic contamination
66.	588/1-261	Hazardous or toxic waste destruction or containment
67.	95/57-81, 149-240	In atmosphere
68.	210/600-808; 405/60	In water
69.	405/129.95	Landfill
70.	588/1-20, 400	Nuclear waste containment or disposal
71.	800/260-323.3	Plants and plant breeding
72.	264/36.1-36.22, 911-921; 521/40-49.8	Post-consumer material
73.	162/29, 189-191; 164/5; 521/40-49.8; 562/513	Recovery of excess process materials or regeneration from waste stream
74.	29/403.1-403.4; 75/401-403; 156/94; 264/37.1-37.33	Recycling
75.	110/345; 422/900	Smokestack
76.	405/128.1-128.9, 129.1-129.95	Soil
77.	435/626-282	Toxic material cleanup
78.	588/all	Toxic material permanent containment or destruction
79.	435/262.5	Using microbes or enzymes