No. 08-964

IN THE

Supreme Court of the United States

BERNARD L. BILSKI AND RAND A. WARSAW,
Petitioners,

v.

JOHN J. DOLL, ACTING UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND ACTING DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE,
Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

BRIEF FOR PETITIONERS

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QUESTIONS PRESENTED

1. Whether the Federal Circuit erred by holding that a "process" must be tied to a particular machine or apparatus, or transform a particular article into a different state or thing ("machine-or-transformation" test), to be eligible for patenting under 35 U.S.C. § 101, despite this Court's precedent declining to limit the broad statutory grant of patent eligibility for "any" new and useful process beyond excluding patents for "laws of nature, physical phenomena, and abstract ideas."

2. Whether the "machine-or-transformation" test for patent eligibility adopted by the Federal Circuit, effectively foreclosing meaningful patent protection to a business method involving a series of transactions among a commodity provider, consumers, and market participants, contradicts the clear Congressional intent that patents protect "method[s] of doing or conducting business." 35 U.S.C. § 273.

PARTIES TO THE PROCEEDING

All of the parties to the proceeding in the court below are named in the caption of the case in this Court.

RULE 29.6 CORPORATE DISCLOSURE STATEMENT

The amended corporate disclosure statement in Petitioners' reply brief on the petition for a writ of certiorari remains accurate. In addition, Petitioners note that WeatherWise USA, Inc., is a party-in-interest in the patent application.

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BRIEF FOR PETITIONERS

OPINIONS BELOW

The opinion of the U.S. Court of Appeals for the Federal Circuit (Pet. App. 1a-143a) is reported at *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008) (en banc). The Order of the U.S. Court of Appeals for the Federal Circuit granting a hearing en banc (Pet. App. 144a-145a) is reported at *In re Bilski*, 264 F. App'x 896 (Fed. Cir. 2008).

The opinion of the Board of Patent Appeals and Interferences of the United States Patent and Trademark Office (Pet. App. 146a-205a) is reported at *Ex parte Bilski*, 2006 WL 5738364 (B.P.A.I. Sept. 26, 2006).

JURISDICTION

The en banc judgment of the U.S. Court of Appeals for the Federal Circuit was entered on October 30, 2008. The jurisdiction of this Court is invoked under 28 U.S.C. § 1254(1).

STATUTORY PROVISIONS INVOLVED

"Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title." 35 U.S.C. § 101.

"The term 'process' means process, art or method, and includes a new use of a known process, machine, manufacture, composition of matter, or material." 35 U.S.C. § 100(b).

"It shall be a defense to an action for infringement under section 271 of this title with respect to any subject matter that would otherwise infringe one or more claims for a method in the patent being asserted against a person, if such person had, acting in good faith, actually reduced the subject matter to practice at least 1 year before the effective filing date of such patent, and commercially used the subject matter before the effective filing date of such patent." 35 U.S.C. § 273(b)(1).

"[T]he term 'method' means a method of doing or conducting business." 35 U.S.C. § 273(a)(3).

STATEMENT OF THE CASE

A. The Claimed Invention

Bernard Bilski and Rand Warsaw invented a method of hedging the consumption risk associated with a commodity sold at a fixed price for a given period. The method can be used, for example, with energy commodities like natural gas, electricity, or coal, and includes ways to compensate for the risk of abnormal weather conditions. It enables both energy suppliers and consumers to minimize the risk of fluctuations in demand during a given period. Thus, for example, a school district with a fixed tax base and budget for heating or cooling requirements can be protected from yearly fluctuations in weather, while the suppliers are protected from the opposite effect of such fluctuations.

More specifically, the Bilski patent application, entitled "Energy Risk Management Method," describes a method in which energy consumers, such as businesses and homeowners, are offered a fixed energy bill, for example, for the winter so they can avoid the risk of high heating bills due to abnormally cold weather. J.A. 10, 13. An intermediary or "commodity provider" sells natural gas, in this example, to a consumer at a fixed price based on its risk position for a given period of time, thus isolating the consumer from an unusual spike in demand caused by a cold winter. Regardless of how much gas the consumer uses consistent with the method, the heating bill will remain fixed.

According to the patent application, setting the fixed bill price for the consumer is not a simple process. *See id.* at 12-14. For example, a consumer's

"unhedged" energy bill for a given period can be expressed as follows:

> Energy Bill = $F_i + (C_i + T_i + LD_i) \times Q_i$, where
>
> F_i = fixed costs in period i;
>
> C_i = variable commodity costs in period i;
>
> T_i = variable long distance transportation costs in period i;
>
> LD_i = variable LDC or local delivery costs in period i; and
>
> Q_i = consumption in period i.

J.A. 12. The consumer could fix a portion of the costs by using futures, for example, to lock in a price on the portion of consumption that is known with certainty. This type of "hedge" is not effective, however, to the extent that consumption is driven by the weather. *Id.* at 13. Thus, a school district, for example, cannot reduce its risk simply by locking in a price since much of the risk depends on the weather. *Id.*

To account for the weather, the patent application teaches that a consumer's fixed bill price can be determined as follows:

> Fixed Bill Price = $F_i + [(C_i + T_i + LD_i) \times (\alpha + \beta E (W_1))]$

In this equation, $\alpha + \beta E (W_1)$ represents an approximation of the amount of consumption driven by the weather, which is estimated with a least squares statistical model based on historical averages. *See id.* at 13-14.

Having assumed the risk of a very cold winter, the same commodity provider hedges against that risk by buying the energy commodity at a second fixed price

from energy suppliers called "market participants." *Id.* at 12. These market participants or suppliers have a risk position counter to the consumers, that is, they want to avoid the risk of a high drop in demand due to an unusually warm winter. A market participant could be, for example, someone with a large inventory of gas who wants to guarantee the sale of a portion of it by entering into a contract now. The risk assumed in the transactions with the market participants at the second fixed rate balances the risk of the consumer transactions at the first rate. *Id*. at 12, 15.

The commodity provider must take additional statistical modeling steps (Monte Carlo simulations, one-tail tests) to properly price a deal and estimate an acceptable margin over the entire portfolio of transactions. *Id.* at 16. The steps taken in pricing a deal, and in managing the portfolio, are shown in Figure 2[1] of the application and described at J.A. 16-19:

[1] The application as filed (found at J.A. 10-23) did not include Figure 2, which was added by amendment (Applicants' Supplemental Amendment, 11/15/99) in response to the patent examiner's requirement to provide a drawing under 37 C.F.R. § 1.81 (PTO Office Action, 11/8/99, p. 2).

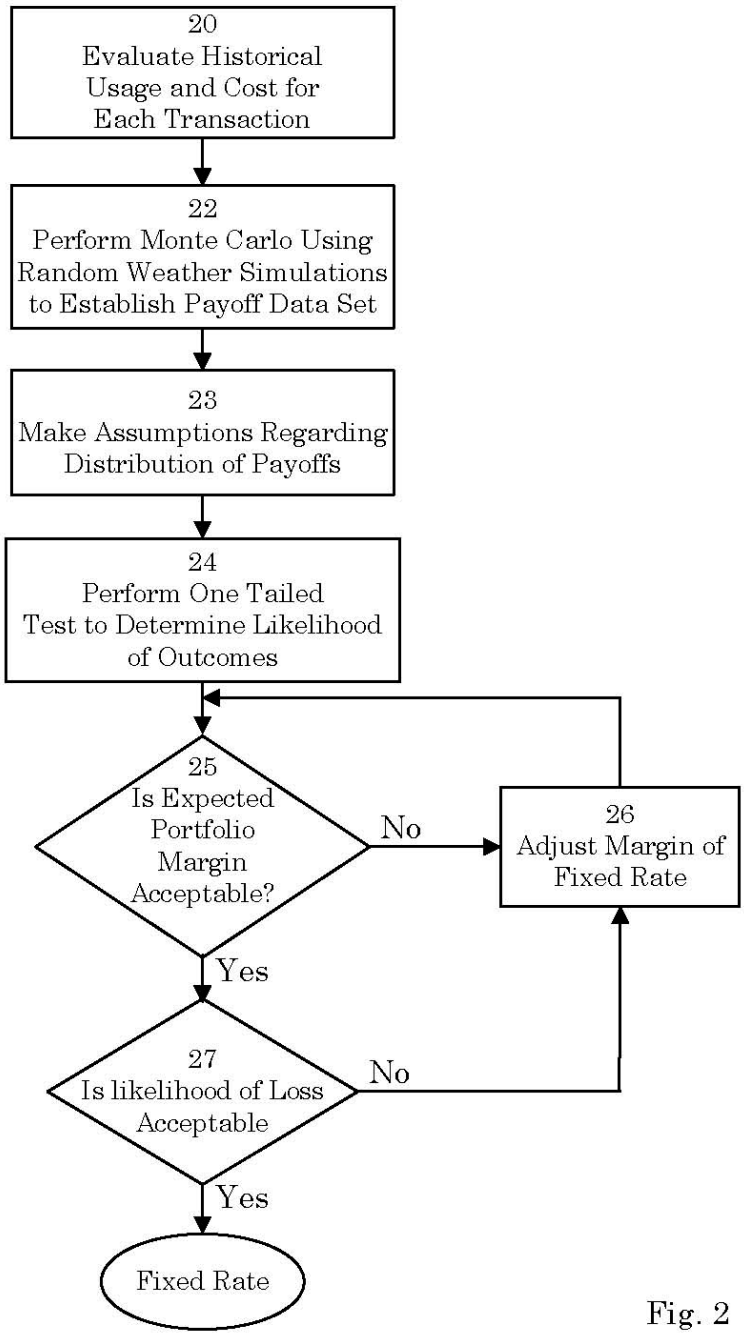
20
Evaluate Historical Usage and Cost for Each Transaction
22
Perform Monte Carlo Using Random Weather Simulations to Establish Payoff Data Set
23
Make Assumptions Regarding Distribution of Payoffs
24
Perform One Tailed Test to Determine Likelihood of Outcomes
25
Is Expected Portfolio Margin Acceptable?
No
26
Adjust Margin of Fixed Rate
Yes
27
Is likelihood of Loss Acceptable
No
Yes
Fixed Rate

Fig. 2

The method of the invention does not necessarily have to be performed on a particular machine or computer, although the practice of the invention will most likely involve both computers and modern telecommunications. The method steps are no less real, however, as they require communicating and negotiating with consumers and suppliers in a particular way to balance risk positions. The invention is claimed in a series of steps as follows:

> 1. A method for managing the consumption risk costs of a commodity sold by a commodity provider at a fixed price comprising the steps of:
>
> (a) initiating a series of transactions between said commodity provider and consumers of said commodity wherein said consumers purchase said commodity at a fixed rate based upon historical averages, said fixed rate corresponding to a risk position of said consumer;
>
> (b) identifying market participants for said commodity having a counter-risk position to said consumers; and
>
> (c) initiating a series of transactions between said commodity provider and said market participants at a second fixed rate such that said series of market participant transactions balances the risk position of said series of consumer transactions.

Fed. Cir. J.A. A-198. Claim 4 of the patent application is similar to claim 1 except that it specifies precisely how the fixed price for an energy consumer transaction is determined using a mathematical formula:

4. A method for managing weather-related energy price risk costs sold by an energy provider at a fixed price comprising the steps of:

(a) initiating a series of transactions between said energy provider and energy consumers wherein said energy consumers purchase energy at a fixed rate based upon historical averages, said fixed rate corresponding to a risk position of said consumers, wherein the fixed price for the consumer transaction is determined by the relationship:

Fixed Bill Price = $F_i + [(C_i + T_i + LD_i) \times (\alpha + \beta E(W_l))]$

Wherein,

F_i = fixed costs in period i;

C_i = variable costs in period i;

T_i = variable long distance transportation costs in period i;

LD_i = variable local delivery cost in period i;

$E(W_l)$ = estimated location-specific weather indicator in period i; and

α and β are constants;

(b) identifying other energy market participants having a counter-risk position to said consumers; and

(c) initiating a series of transactions between said energy provider and said other energy market participants at a second fixed rate such that said series of transactions balances the risk position of said series of consumer transactions.

Fed. Cir. J.A. A-198 to A-199.

B. Proceedings In The Patent And Trademark Office

1. In the first Office Action from the Patent and Trademark Office (PTO), the patent examiner found claims 4-8 of the Bilski application to be patentable over the prior art (claim 4 was the same as above except written in dependent form) but rejected claims 1-3 and 9. (PTO Office Action, 3/4/99, pp. 2-4.) In response to an amendment filed by the applicants (Applicants' Amendment, 5/3/99), the examiner again allowed claims 4-8 and new claims 10-11, but maintained the rejection of claims 1-3 and 9 over the prior art (PTO Office Action, 7/21/99, pp. 2-5).

Then, in a third Office Action, the patent examiner withdrew the prior art rejections and instead rejected all the claims, including claims 4-8 and 10-11, under only 35 U.S.C. § 101, as directed to nonstatutory subject matter. (PTO Office Action, 11/8/99, pp. 2-3.) The examiner stated that "the invention is not implemented on a specific apparatus and merely manipulates [an] abstract idea and solves a purely mathematical problem without any limitation to a practical application, therefore, the invention is not directed to the technological arts." Pet. App. 148a.

2. When the § 101 rejection was made final (PTO Office Action, 3/28/00, pp. 2-5), the Bilski applicants appealed to the PTO Board of Patent Appeals and Interferences under 35 U.S.C. § 134(a) (Notice of Appeal, 4/10/00). The PTO Board had jurisdiction pursuant to 35 U.S.C. § 6(b). An expanded panel of the PTO Board affirmed the rejection in a 70-page opinion. Pet. App. 146a-205a. Admitting that it was "struggling to identify some way to objectively analyze the statutory subject matter issue," *id.* at 154a, the PTO Board analyzed the claims under various

tests. The Board considered this Court's exclusion of "abstract ideas" in *Diamond v. Diehr*, 450 U.S. 175 (1981), the Federal Circuit's "useful, concrete, and tangible result" test from *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998), the "transformation of physical subject matter" test discussed by the Board in *Ex parte Lundgren*, 2004 WL 3561262 (B.P.A.I. April 20, 2004), and the PTO's *Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility,* 1300 OFFICIAL GAZETTE U.S. PAT. & TRADEMARK OFF., Nov. 22, 2005, at 142. Pet. App. 180a-190a.

Applying these various tests, the PTO Board concluded that the Bilski claims did not recite statutory subject matter. The Board reversed the examiner's reasoning, however, affirming its earlier holding in *Lundgren* that the "technological arts" is not a separate and distinct test for statutory subject matter. *Id.* at 180a. The Board also refuted the examiner's requirement of a specific apparatus because a claim may still be patent-eligible "if there is a transformation of physical subject matter from one state to another." *Id.* at 181a. Elaborating further, the Board stated: "'mixing' two elements or compounds to produce a chemical substance or mixture is clearly a statutory transformation although no apparatus is claimed to perform the step and although the step could be performed manually." *Id.*

According to the PTO Board, however, the Bilski claims do not involve any patent-eligible transformation because they only transform "non-physical financial risks and legal liabilities of the commodity provider, the consumer, and the market participants." *Id.* at 182a. The Board concluded that the

claims merely recite an "abstract idea" since they are not "instantiated in some physical way so as to become a practical application of the idea." *Id.* at 184a. Recognizing that actual physical acts of individuals or organizations would still be required to implement the steps of the method, the Board nevertheless held that the claims were directed to the "'abstract idea' itself" because they cover every possible way of performing those steps. *Id*.

C. The Federal Circuit's En Banc Decision

The Bilski applicants appealed the PTO Board's decision to the U.S. Court of Appeals for the Federal Circuit under 35 U.S.C. § 141. The Federal Circuit had jurisdiction over the appeal pursuant to 28 U.S.C. § 1295(a)(4)(A). After argument before a panel of the court, but before any decision, the Federal Circuit ordered that the appeal would be heard en banc. Pet. App. 144a.

1. In the en banc decision, the Federal Circuit majority held that Bilski's claims are not eligible for patenting and set forth a single, "definitive" test for determining whether a process is patent-eligible under § 101: a process is patent-eligible only if "(1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing." *Id.* at 12a. Although the Supreme Court has twice expressly declined to hold that this so-called "machine-or-transformation" test is the only test for patentable processes under § 101, *see Parker v. Flook*, 437 U.S. 584, 588 n.9 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 71 (1972), the Federal Circuit majority opinion seized on a sentence from *Diehr*, 450 U.S. at 184, quoted from *Benson*, 409 U.S. at 70, that "[t]ransformation and reduction of an article 'to a different state or thing' is *the* clue to the patentability

of a process claim that does not include particular machines." Pet. App. 12a (emphasis added by Federal Circuit). Taking this Court's description of the machine-or-transformation test as "*the*" clue literally, the majority held that this test was not "optional or merely advisory" but rather "the sole test" for patent-eligible processes. *Id.* at 15a-16a & n.11.

In doing so, the Federal Circuit majority overruled its earlier decisions in *State Street Bank* and *AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352 (Fed. Cir. 1999), to the extent they relied on a "useful, concrete, and tangible result" as the test for patent eligibility under § 101. This formulation, originally set forth by the en banc Federal Circuit in *In re Alappat*, 33 F.3d 1526, 1544 (Fed. Cir. 1994), was discarded in *Bilski* as "inadequate." Pet. App. 24a. Although *Alappat*, *State Street Bank*, and *AT&T* all contain extensive discussions of the same Supreme Court cases now relied on in support of the mandatory "machine-or-transformation" test, the Federal Circuit observed that "useful, concrete, and tangible result" was "never intended to supplant the Supreme Court's test." *Id.*

The Federal Circuit majority nevertheless acknowledged some doubt about its interpretation of this Court's precedent as dictating that the "machine-or-transformation" test is the sole test for patentable processes. Citing *Diehr*, 450 U.S. at 192, where this Court stated:

> [W]hen a claim containing a mathematical formula implements or applies that formula in a structure or process which, when considered as a whole, is performing a function which the patent laws were designed to protect (*e.g.*, transforming or reducing an article to a different state or

> thing), then the claim satisfies the requirements of § 101.

the majority admitted that "language such as the use of 'e.g.' may indicate the Supreme Court's recognition that the machine-or-transformation test might require modification in the future." Pet. App. 17a-18a n.12. The majority also recognized that this Court "may ultimately decide to alter or perhaps even set aside this test to accommodate emerging technologies." *Id.* at 17a.

2. The Federal Circuit majority's holding that "the machine-or-transformation test is the only applicable test" for patent-eligible processes, *id.* at 34a, provoked several vigorous dissents. Reviewing two centuries of precedent and statutory history, Circuit Judge Newman maintained in dissent that the majority's test is "a new and far-reaching restriction on the kinds of inventions that are eligible to participate in the patent system." *Id.* at 60a. The majority's decision, she wrote, introduces uncertainties that "not only diminish the incentives available to new enterprise, but disrupt the settled expectations of those who relied on the law as it existed." *Id.* at 61a.

Circuit Judge Rader likewise dissented because, in his view, the majority's machine-or-transformation test "disrupts settled and wise principles of law." *Id.* at 134a. In particular, he wrote, "the statute does not mention 'transformations' or any of the other Industrial Age descriptions of subject matter categories that this court endows with inordinate importance today." *Id.* at 142a-143a. According to Judge Rader, the majority's test "propagates unanswerable questions" and "links patent eligibility to the age of iron

and steel at a time of subatomic particles and terabytes." *Id.* at 134a, 142a.

Also in dissent, Circuit Judge Mayer wrote that the majority's test is "unnecessarily complex and will only lead to further uncertainty regarding the scope of patentable subject matter." *Id* at 131a. While the PTO and the larger patent community have actively sought guidance from the Federal Circuit on this issue, Judge Mayer contended that "[t]he majority's 'measured approach' to the section 101 analysis . . . will do little to restore public confidence in the patent system." *Id.* at 132a.

SUMMARY OF THE ARGUMENT

1. Section 101 of the Patent Act provides patent eligibility for "any" new and useful process. Consistent with its plain language, this Court has interpreted § 101 to be extremely broad. Moreover, the courts should not place additional limits on patent-eligible subject matter that have not been expressed by Congress. To be sure, natural laws and phenomena can never qualify for patent protection because they cannot be invented at all. And abstract ideas are not eligible either because they are not "useful" and they must be applied to a practical use before they can be patented. But the Federal Circuit has gone much further in limiting patents on processes, holding that the only patent-eligible processes are those that meet the court's mandatory "machine-or-transformation" test.

Requiring a special test for "process" inventions conflicts with the plain language of the statute and this Court's precedents. There is no statutory basis for treating processes differently from the other categories of patentable subject matter. Moreover, the

Court has twice declined to hold that a process must be tied to a machine or transform articles in order to be patentable. By requiring all processes to meet its "definitive" machine-or-transformation test, the Federal Circuit has repudiated this Court's broad, flexible framework for patent subject matter eligibility.

2. The Federal Circuit's "machine-or-transformation" test for process patents not only conflicts with § 101 and this Court's precedents, but it is also inconsistent with the Patent Act's recognition that business methods are eligible for patenting. In 1999, Congress enacted a prior user defense to infringement of business method patent claims to protect those who had mistakenly thought commercialized business methods are not patentable. 35 U.S.C. § 273. In this act, Congress embraced both business methods and the Federal Circuit's *State Street Bank* "useful, concrete, and tangible result" test. The legislative history of § 273 shows that Congress did not intend to limit the defense to only those business methods that are tied to machines or that transform articles. Rather, Congress defined patentable business methods broadly enough to encompass Petitioners' method of hedging consumption risk. In fact, Congress specifically recited financial transactions like Petitioners' risk-hedging method as examples of business methods subject to patenting.

Consequently, in light of § 273, § 101 must be read broadly enough to protect methods of doing business, even if they are not tied to a particular machine and do not transform articles. Under the Federal Circuit's mandatory machine-or-transformation test, however, § 273 would provide a meaningless defense to the infringement of a class of patents that cannot exist. That cannot be what Congress intended, and

the Federal Circuit's failure to address this conflict between its decision and the clear legislative intent expressed through the adoption of § 273 warrants reversal.

3. The Federal Circuit's machine-or-transformation test should be rejected because it legislates new public policy and disrupts the settled expectations of thousands of patent owners and inventors. Without new guidance from Congress or this Court, the Federal Circuit has retreated from its formerly technology-neutral position by excluding new and useful business-related processes, which may or may not be implemented on a machine. The Federal Circuit has essentially confined all process patents to manufacturing methods, using a test that may have been appropriate during the Industrial Age but no longer fits our modern information-based economy. In doing so, the Federal Circuit has ventured into territory reserved for the legislature and disrupted the legitimate expectations of patent owners and inventors in their property.

Any concerns over potentially vague or trivial patents for business methods should be addressed by the other requirements for patentability, such as novelty, nonobviousness, and definite claiming. Indeed, limiting patentable processes under § 101 to those that are tied to machines or transform subject matter will do little to combat these types of patents, which also fit into other statutory categories of patent-eligible subject matter. The existing requirements for patentability—properly applied—are better suited than the machine-or-transformation test to prevent the issuance of vague or trivial patents for business methods as well as all other fields.

4. Although abstract ideas, laws of nature, and natural phenomena are not patentable under § 101, this Court has held that a "practical application" of one of these principles may be patented. A tie to a machine or a transformative process is therefore sufficient, but not necessary, to demonstrate a patent-eligible practical application of a principle. The practical application standard has been flexibly applied to a variety of inventions and should continue to be applied here.

Although certain cases have found patent-eligible subject matter where a principle has been practically applied in either an apparatus or a chemical or manufacturing process, nonmanufacturing processes have historically been eligible for patenting under the statute too. The Federal Circuit's mandatory machine-or-transformation test is too restrictive and is unnecessary to prevent patenting abstract ideas or laws of nature. Rather, this Court should reaffirm that a practical application of a principle in an art or process is eligible for patenting.

5. Finally, the Federal Circuit's decision should be reversed because the Bilski application claims patentable subject matter under § 101. Claim 1 does not cover the abstract idea of hedging. It recites a specific series of steps involving the purchase and sale of commodities by an intermediary commodity provider to manage consumption risk costs. Even if claim 1 does include the abstract idea of hedging, it is still patentable because the abstract idea is practically applied. Likewise, the mathematical formula in claim 4, which is used to determine the fixed price for consumer transactions, is practically applied as part of a method of managing weather-related energy price risk costs.

Therefore, the claims in the Bilski application satisfy § 101. All of the claims recite a "process," one of the four enumerated categories of patentable subject matter. To the extent the claims invoke a mathematical principle, the principle is practically applied in a process to a useful end. Because the claims recite patentable subject matter under § 101, the Federal Circuit's decision should be reversed.

ARGUMENT

I. THE FEDERAL CIRCUIT'S MANDATORY "MACHINE-OR-TRANSFORMATION" TEST HAS NO BASIS IN THE PATENT STATUTE AND CONFLICTS WITH THIS COURT'S PRECEDENTS

A. The Plain Language Of The Statute Is Extremely Broad, As This Court Has Repeatedly Held

Section 101 of the Patent Act extends patent protection to "any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof." 35 U.S.C. § 101. To construe the statute, "we begin, of course, with the language of the statute." *Diamond v. Chakrabarty*, 447 U.S. 303, 308 (1980). The statutory text uses the expansive modifier "any" to introduce four categories of patent-eligible subject matter: process, machine, manufacture, or composition of matter. The meaning of "any . . . process" is at issue in this case.

A "process" is defined as a "process, art or method . . . includ[ing] a new use of a known process, machine, manufacture, composition of matter, or material." 35 U.S.C. § 100(b). In statutory construction, "unless otherwise defined, words will be interpreted as taking their ordinary, contemporary, common

meaning." *Chakrabarty*, 447 U.S. at 308 (quoting *Perrin v. United States*, 444 U.S. 37, 42 (1979)). This Court has more than once cautioned that "courts 'should not read into the patent laws limitations and conditions which the legislature has not expressed.'" *Chakrabarty*, 447 U.S. at 308 (quoting *United States v. Dubilier Condenser Corp.*, 289 U.S. 178, 199 (1933)); *see also Diamond v. Diehr*, 450 U.S. 175, 182 (1981).

Consistent with the statutory language and the proscription against reading limitations into the patent laws, this Court has long interpreted § 101 to be extremely broad. *J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred Int'l, Inc.*, 534 U.S. 124, 130 (2001) ("As this Court recognized over 20 years ago in *Chakrabarty*, the language of § 101 is extremely broad."); *see also Chakrabarty*, 447 U.S. at 308 ("Congress plainly contemplated that the patent laws would be given wide scope"); *O'Reilley v. Morse*, 15 How. (56 U.S.) 62, 131 (1854) (Grier, J., dissenting) ("[T]he [patent] statute is as broad as language can make it."). In doing so, the Court has also been informed by congressional intent that statutory subject matter "include anything under the sun that is made by man." *Chakrabarty*, 447 U.S. at 309 (quoting S. REP. NO. 82-1979, at 5 (1952), *as reprinted in* 1952 U.S.C.C.A.N. 2394, 2399; H.R. REP. NO. 82-1923, at 6 (1952)). Like § 101 generally, this Court has also acknowledged that "[t]he statutory definition of 'process' is broad." *Parker v. Flook*, 437 U.S. 584, 588 n.9 (1978).

Within the "extremely broad" reach of § 101, "laws of nature, physical phenomena, and abstract ideas have been held not patentable." *Chakrabarty*, 447 U.S. at 309; *see also Diehr*, 450 U.S. at 185. These cannot be patented because "[a] principle, in the

abstract, is a fundamental truth; an original cause; a motive; these cannot be patented, as no one can claim in either of them an exclusive right." *Le Roy v. Tatham*, 14 How. (55 U.S.) 156, 175 (1853). Other than prohibiting patenting laws of nature and abstract ideas, however, the courts should not place additional limits on patent-eligible subject matter that have not been expressed by Congress. *See Diehr*, 450 U.S. at 182; *Chakrabarty*, 447 U.S. at 308. That is what the Federal Circuit did here.

B. The Federal Circuit's Mandatory "Machine-Or-Transformation" Test Conflicts With This Court's Precedents

1. The Federal Circuit Erred By Adopting An Exclusion To Patentable Subject Matter That This Court Has Twice Rejected

To this Court's prohibition against patenting laws of nature, physical phenomena, and abstract ideas, the Federal Circuit has now added another exclusion: processes that do not satisfy its machine-or-transformation test. "[T]he machine-or-transformation test is the only applicable test and must be applied . . . when evaluating the patent-eligibility of process claims." Pet. App. 34a.

The Supreme Court has twice expressly declined to hold that the "machine-or-transformation" test is the only test for determining whether a process is patentable under § 101, as the Federal Circuit majority has now done. In *Gottschalk v. Benson,* 409 U.S. 63, 71 (1972), the Court wrote:

> It is argued that a process patent must either be tied to a particular machine or apparatus or must operate to change articles or materials to a

> "different state or thing." We do not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents.

The Court reaffirmed this position in *Flook*:

> The statutory definition of "process" is broad. An argument can be made, however, that this Court has only recognized a process as within the statutory definition when it either was tied to a particular apparatus or operated to change materials to a "different state or thing." As in *Benson*, we assume that a valid process patent may issue even if it does not meet one of these qualifications of our earlier precedents.

437 U.S. at 588 n.9 (citations omitted).

The Federal Circuit acknowledged that this Court has twice declined to hold that a process must be tied to a machine or transform articles in order to be patentable. Pet. App. 15a-16a. Nonetheless, the *Bilski* majority seized on a passage from *Diehr* in which the Court repeated a quote from *Benson*: "[t]ransformation and reduction of an article 'to a different state or thing' is *the* clue to the patentability of a process claim that does not include particular machines." Pet. App. 15a-16a (quoting *Benson*, 409 U.S. at 70) (emphasis added by Federal Circuit). But the Supreme Court, in the case being quoted, expressly *did not hold* that a process must be tied to a machine or transform articles to be eligible for patenting. *Benson*, 409 U.S. at 71. And the Court in *Diehr* cited the transformation test as only an example (using the signal '*e.g.*') of how a process could satisfy § 101. 450 U.S. at 192.

2. The Federal Circuit Erred By Subjecting Processes To Additional Conditions For Patent Eligibility

Requiring a special test for the "process" category of inventions conflicts with the plain language of § 101 and this Court's precedents. There is no statutory basis for treating a "process" differently from the other categories of patentable subject matter. The language of section 101—"any" process—"conveys no implication that the Act extends patent protection to some subcategories of processes but not others. It does not mean 'some' or even 'most,' but all." Pet. App. 136a (Rader, J., dissenting).

Even before the term "process" was added to the Patent Act in 1952, "a process . . . historically enjoyed patent protection because it was considered a form of 'art' as that term was used in the 1793 Act." *Diehr*, 450 U.S. at 182. With the addition of the term "process" to § 101, "[a]nalysis of the eligibility of a claim of patent protection for a 'process' did not change." *Id.* at 184.

It is well-settled that an art, or process, enjoys patent protection on par with the other types of subject matter enumerated in the statute. More than one hundred years ago, this Court explained:

> [I]t is only useful arts—arts which may be used to advantage—that can be made the subject of a patent. The language of the [1793] statute is, that "any person who has invented or discovered any new and useful art, machine, manufacture, or composition of matter," may obtain a patent therefor. Thus, an art—a process—which is useful, is as much the subject of a patent, as a machine, manufacture, or composition of matter.

> Of this there can be no doubt, and it is abundantly supported by authority.

The Telephone Cases, 126 U.S. 1, 533 (1887) (citing *Corning v. Burden*, 15 How. (56 U.S.) 252, 267 (1854); *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1877); *Tilghman v. Proctor*, 102 U.S. 707, 722, 724-25 (1881); *New Process Fermentation Co. v. Maus*, 122 U.S. 413, 427-28 (1887)) (citation omitted).

More recently, this Court has applied the same patent eligibility analysis to process and product claims. For example, in *Benson*, this Court analyzed a process claim using reasoning originally applied to claims to a plant inoculant in *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948). "We dealt [in *Funk Bros.*] with a 'product' claim, while the present case deals with a 'process' claim. But we think the same principle applies." *Benson*, 409 U.S. at 67-68. Without support in the statute or direction from this Court, the Federal Circuit's insistence on a special test for "process" inventions is an error that should be reversed.

3. The Particulars Of The Machine-Or-Transformation Test Compound The Errors In The Decision Below

1. The Federal Circuit's emphasis on the relationship between a process and a machine conflicts with this Court's repeated explanations that a process is patentable irrespective of any tie to a machine. "That a process may be patentable, irrespective of the particular form of the instrumentalities used, cannot be disputed." *Cochrane*, 94 U.S. at 787. As explained in *Corning v. Burden*:

> It is for the discovery or invention of some practicable method or means of producing a beneficial

> result or effect, that a patent is granted, and not for the result or effect itself. It is when the term process is used to represent the means or method of producing a result that it is patentable, and it will include all methods or means which are not effected by mechanism or mechanical combinations.

56 U.S. at 268; s*ee also New Process Fermentation Co.*, 122 U.S. at 427 ("[T]he method or art . . . of the patent is patentable as a process, irrespective of the apparatus or instrumentality for carrying it out."). A process has been found patentable even when an inventor "testifies that he at first executed his process by hand. Other witnesses . . . say that they could do likewise from the information found in the patent. The important thing in this patent is a method of procedure, not the particular means by which the method shall be practised." *Expanded Metal Co. v. Bradford*, 214 U.S. 366, 380-81 (1909).

Rather than requiring a process to be tied to a machine, this Court has distinguished the two categories.

> A machine is a thing. A process is an act, or a mode of acting. The one is visible to the eye, — an object of perpetual observation. The other is a conception of the mind, seen only by its effects when being executed or performed. Either may be the means of producing a useful result.

Tilghman, 102 U.S. at 728. In *O'Reilley v. Morse*, Justice Grier warned in dissent that:

> To look at an art as nothing but a combination of machinery, and give it protection only as such, against the use of the same or similar devices or mechanical equivalents, is to refuse it protection

> as an art. It ignores the distinction between an art and a machine; it overlooks the clear letter and spirit of the statute; and leads to inextricable difficulties.

56 U.S. at 133 (Grier, J., dissenting).

This Court has explained that identifying any means for performing a process is necessary only to show utility, not patent-eligible subject matter:

> The patent for the art does not necessarily involve a patent for the particular means employed for using it. Indeed, the mention of any means, in the specification or descriptive portion of the patent, is only necessary to show that the art can be used; for it is only useful arts—arts which may be used to advantage—that can be made the subject matter of a patent.

The Telephone Cases, 126 U.S. at 533. More recently, this Court noted that Goodyear's process for curing rubber was patentable regardless of the apparatus employed. "The apparatus for performing the process was not patented, and was not material. The patent pointed out how the process could be effected, and that was deemed sufficient." *Diehr*, 450 U.S. at 185 n.8 (quoting *Tilghman*, 102 U.S. at 722).

2. For a process that is not tied to a machine, the Federal Circuit's test requires the transformation of "a particular article into a different state or thing." Pet. App. 12a. By requiring the transformation of physical articles or chemicals, the machine-or-transformation test "links patent eligibility to the age of iron and steel at a time of subatomic particles and terabytes." Pet. App. 134a (Rader, J., dissenting).

Despite acknowledging that "[t]he raw materials of many information-age processes . . . are electronic signals and electronically-manipulated data," the majority below suggested that extending patent-eligible transformations to electronic signals would "expand the boundaries of what constitutes patent-eligible transformations of articles." Pet. App. 29a. On the contrary, this Court recognized the patentability of such "information-age" transformations long ago. Alexander Graham Bell's famed telephone patent claimed a method for modifying an electrical current to send and receive speech. "What Bell claims is the art of creating changes of intensity in a continuous current of electricity . . . and of using that electrical condition thus created for sending and receiving articulate speech telegraphically. For that, among other things, his patent of 1876 was in our opinion issued." *The Telephone Cases*, 126 U.S. at 533-34.

The Federal Circuit's difficulty in applying its machine-or-transformation test to "information-age processes" demonstrates the error of a rigid test for patentable subject matter. A primary strength of the Patent Act is the lack of subject matter exclusions, leaving the door open for emerging technologies. By design, "Congress employed broad general language in drafting § 101 precisely because such inventions are often unforeseeable." *Chakrabarty*, 447 U.S. at 316. As illustrated by Bell's case more than century ago, the Supreme Court's broad framework for patent eligibility is flexible enough to accommodate innovations of every age.

4. The Federal Circuit's Rigid Test For Patentable Subject Matter Repudiates This Court's Broad, Flexible Interpretation of § 101

By requiring a process to meet its "definitive" machine-or-transformation test in order to be eligible for patenting, Pet. App. 12a, the Federal Circuit repudiated this Court's broad, flexible framework for patent subject matter eligibility: "anything under the sun that is made by man" except "laws of nature, natural phenomena, and abstract ideas." *Diehr*, 450 U.S. at 182, 185 (citation omitted).

In recent years, this Court has repeatedly cautioned against adopting special, rigid rules for patent cases where this Court's precedents follow a broader, more flexible framework. In *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722 (2002), this Court rejected the Federal Circuit's attempt to impose an "absolute" bar to the application of the doctrine of equivalents when a patent claim is narrowed during prosecution. Although this Court had previously applied the doctrine in a consistently flexible way, the Federal Circuit concluded that the flexible approach was "unworkable because it leads to excessive uncertainty and burdens legitimate innovation." *Festo*, 535 U.S. at 737. This Court unanimously rejected the Federal Circuit's "absolute bar" rule, warning that "courts must be cautious before adopting changes that disrupt the settled expectations of the inventing community." *Id.* at 739.

In *eBay Inc. v. MercExchange, LLC*, 547 U.S. 388, 393-94 (2006), the Court unanimously rejected the Federal Circuit's attempt to impose a rule "unique to patent disputes, 'that a permanent injunction will issue once infringement and validity have been ad-

judged.'" Rather than a special rule for patent cases, this Court instructed the Federal Circuit to apply the "traditional principles of equity" to determine when an injunction should issue "in patent disputes no less than in other cases governed by such standards." *Id.* at 394.

In *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398 (2007), this Court unanimously rejected the Federal Circuit's application of the "teaching, suggestion, or motivation" test as the only test for obviousness under 35 U.S.C. § 103. The Federal Circuit had adopted the so-called TSM test in an attempt to resolve the question of obviousness "with more uniformity and consistency." *Id.* at 399. Rejecting "the rigid approach of the Court of Appeals," this Court noted that its own cases "have set forth an expansive and flexible approach inconsistent with the way the Court of Appeals applied its TSM test here." *Id.* at 415. The Court cautioned that "when a court transforms the general principle into a rigid rule that limits the obviousness inquiry, as the Court of Appeals did here, it errs." *Id.* at 419.

Like its previous attempts to impose rigid rules for patents despite a flexible framework set forth by this Court, the Federal Circuit's mandatory machine-or-transformation test should be reversed.

II. SECTION 101 MUST BE READ BROADLY ENOUGH TO PROTECT "METHOD[S] OF DOING OR CONDUCTING BUSINESS" IN LIGHT OF 35 U.S.C. § 273

A. The Patent Act Expressly Provides For Patents On Business Methods

In 1999, Congress enacted section 273 of the Patent Act, providing a defense to infringement of patents for business methods. 35 U.S.C. § 273(b). The statute broadly defines business methods: "the term 'method' means a method of doing or conducting business." 35 U.S.C. § 273(a)(3). For the defense to apply, the business method must be "commercially used," which the statute defines as "use . . . in connection with an internal commercial use or an actual arm's-length sale or other arm's-length commercial transfer of a useful end result." 35 U.S.C. § 273(a)(1). Like § 101, the text of § 273 makes no mention of methods tied to machines or transforming articles.

Sections 273 and 101 must be read together as part of an harmonious whole. *See FTC v. Mandel Bros., Inc.*, 359 U.S. 385, 389 (1959) (stating courts should "fit, if possible, all parts [of a statute] into an harmonious whole"). "It is a fundamental canon of statutory construction that the words of a statute must be read in their context and with a view to their place in the overall statutory scheme." *Davis v. Mich. Dept. of Treasury*, 489 U.S. 803, 809 (1989). Because § 273 recognizes patent protection for business methods in commercial use, § 101 cannot be construed to exclude them from patent protection.

B. The Machine-Or-Transformation Test For § 101 Disrupts The Balance Struck By Congress When Enacting § 273

1. In *State Street Bank*, the Federal Circuit rejected the "ill-conceived" notion that business methods were excluded from patenting, noting that "[s]ince the 1952 Patent Act, business methods have been, and should have been, subject to the same legal requirements for patentability as applied to any other process or method." 149 F.3d at 1375. In fact, the court noted, "[t]he business method exception has never been invoked by this court, or the CCPA, to deem an invention unpatentable." *Id.* The court also noted the PTO's practice that "[c]laims should not be categorized as methods of doing business. Instead such claims should be treated like any other process claims." *Id.* at 1377 (quoting Examination Guidelines for Computer Related Inventions, 61 Fed. Reg. 7478, 7479 (Feb. 28, 1996)). The court concluded that business methods, like other processes, are patentable under § 101 if they constitute "a practical application of an abstract idea" by producing "a useful, concrete and tangible result." *State Street Bank*, 149 F.3d at 1373. This Court denied certiorari. 525 U.S. 1093 (1999).

Congress took up the issue of business method patenting the following year, noting that the *State Street Bank* case "added to the urgency of the issue," which is "important to many small and large businesses, including financial services, software companies, and manufacturing firms—any business that relies on innovative business processes and methods." H.R. REP. NO. 106-464, at 122 (1999) (Conf. Rep.). Congress understood the Federal Circuit's broad interpretation of § 101 as reaffirming patent protection

for processes that produce a useful result. "As the Court [in *State Street Bank*] noted, the reference to the business method exception had been *improperly applied* to a wide variety of processes, blurring the essential question of whether the invention produced a 'useful, concrete, and tangible result.'" 145 CONG. REC. 29272 (1999); H.R. REP. NO. 106-464, at 122 (1999) (Conf. Rep.) (emphasis added).

Although several members urged Congress to do more "to address the boundaries of the State Street decision,"[2] Congress did not amend the Patent Act to limit patent eligibility for business methods. Instead, Congress enacted § 273, striking "an equitable balance between the interests of U.S. inventors who have invented and commercialized business methods and processes, many of which until recently were thought not to be patentable, and U.S. or foreign inventors who later patent the methods and processes." H.R. REP. NO. 106-464, at 121 (1999) (Conf. Rep.).

2. The legislative history of § 273 shows that Congress did not intend to limit the defense to only those business methods that are tied to machines or that transform articles. Rather, Congress defined patentable business methods in broad enough terms to encompass Petitioners' method of hedging consumption risk. Congress applied the defense to all business methods, "whether in the form of physical products, or in the form of services, or in the form of some other useful results; for example, results pro-

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[2] 145 CONG. REC. 30634 (1999) (statement of Sen. Torricelli); *see also* 145 CONG. REC. 30703 (1999) (statement of Rep. Nadler) ("I believe that it is time for Congress to take a closer look at the State Street decision.").

duced through the manipulation of data or other inputs to produce a useful result." 145 CONG. REC. 29272 (1999).

Like § 101 itself, Congress intended the language of § 273 to be broad. "As used in this legislation, the term 'method' is intended to be construed broadly . . . . '[M]ethod' includes any internal method of doing business, a method used in the course of doing or conducting business, or a method for conducting business in the public marketplace. It includes a practice, process, activity, or system that is used in the design, formulation, testing, or manufacture of any product or service." 145 CONG. REC. 30703 (1999) (statement of Rep. Nadler); 145 CONG. REC. 30634 (1999) (statement of Sen. Schumer); *see also* 145 CONG. REC. 31007 (1999) (statement of Sen. DeWine) ("A method is any systematic way of accomplishing a particular business goal.").

3. Congress recognized the special importance of business method patents and the prior user defense to the financial services industry, which includes Petitioners' consumption risk hedging method. "The *State Street* decision has brought [the financial services] industry abruptly to the forefront of cutting-edge patent law protection . . . ." H.R. REP. NO. 106-287, pt. 1, at 46 (1999). In fact, Congress specifically recited financial transactions like Petitioners' risk-hedging method as examples of business methods subject to patenting. "These financial services may embody business methods or processes incorporated into any number of systems including, but not limited to, trading, investment and liquidity management, securities custody and reporting, balance reporting, funds transfer, ACH, ATM processing, on-line banking, check processing, and compliance and risk man-

agement." *Id.* at 47; *see also* 145 CONG. REC. 31007 (1999) (statement of Sen. DeWine) ("In the context of the financial services industry, methods would include financial instruments (e.g., stocks, bonds, mutual funds), financial products (e.g., futures, derivatives, asset-backed securities), financial transactions, the ordering of financial information, [and] any system or process that transmits or transforms information with respect to eventual investments or financial transactions . . . .").

4. Far from harmonizing its § 101 jurisprudence with § 273, the Federal Circuit ignored Congress's acknowledgement of the "useful, concrete, and tangible result" test and instead overruled the decisions adopting it. Pet. App. 22a-24a & n.19 (concluding that "the 'useful, concrete and tangible result' inquiry is inadequate" and instructing that "those portions of our opinions in *State Street* and *AT&T* relying solely on a 'useful, concrete and tangible result' analysis should no longer be relied on"). In fact, the majority below failed to mention § 273 at all. Despite denouncing the portion of the *State Street Bank* decision that Congress had embraced, the decision claimed to reaffirm that business methods remain patentable under the machine-or-transformation test. *Id.* at 25a.

But in reality, the PTO and the courts have applied the new machine-or-transformation test to reject or invalidate business method claims in dozens of cases. *See, e.g.,* Pet. Reply Br. 6-7. Invalidating a patent for a method of detecting fraudulent credit card transactions, District Judge Marilyn Patel noted that, "[a]lthough the majority declined [to] say so explicitly, *Bilski*'s holding suggests a perilous future for most business method patents." *CyberSource Corp. v. Retail*

Decisions, Inc., 2009 WL 815448, at *9 (N.D. Cal. Mar. 27, 2009). Indeed, she continued, "[t]he closing bell may be ringing for business method patents, and their patentees may find they have become baghold-ers," just like "shareholder[s] left holding shares of worthless stocks." *Id.* at *10 & n.16.

Under the mandatory application of the machine-or-transformation test, § 273 would provide a mea-ningless defense to the infringement of a class of patents that cannot exist. That cannot be what Congress intended, and the Federal Circuit's failure to address this conflict between its decision and the clear legislative intent expressed through the adop-tion of § 273 warrants reversal.

C. *J.E.M. Ag Supply* Illustrates The Proper Way To Harmonize § 101 With Other Parts Of The Patent Act

1. In *J.E.M. Ag Supply,* the alleged infringer of a patent for a newly-developed plant argued that the patent was invalid under § 101 because Congress provided patent protection for plants under two other statutes. 534 U.S. at 127. That argument required the Court to consider the proper interpretation of § 101 in light of the settled PTO practice of issuing utility patents for plants and congressional amend-ments to another section of the Patent Act. The Court began by reaffirming its earlier precedent hold-ing that "the language of § 101 is extremely broad" and rejecting "the argument that Congress must ex-pressly authorize protection for new patentable sub-ject matter." 534 U.S. at 130.

The Court in *J.E.M. Ag Supply* observed that the PTO had adopted a settled practice of issuing utility patents for plants after the *Chakrabarty* decision. *Id.*

at 144-45. This "highly visible decision" was relied on by the PTO Board and led to the issuance of some 1,800 utility patents for plants. *Id.* at 145. "In the face of these developments," this Court found it significant that "Congress has . . . failed to pass legislation indicating that it disagrees with the PTO's interpretation of § 101" allowing for utility patents in this area. *Id.* The *J.E.M. Ag Supply* Court noted that Congress "has even recognized the availability of utility patents for plants" under § 101 based on a 1999 amendment to another provision of the Patent Act concerning the right of priority, 35 U.S.C. § 119. *Id.* "Crucially, § 119(f) is part of the general provisions of Title 35, not the specific chapter of the [Plant Patent Act], which suggests a recognition on the part of Congress that plants are patentable under § 101." *Id.* In view of the PTO's history of issuing patents for plants, Congress's failure to indicate its disagreement with the practice, and a relevant amendment to another section of the Patent Act, the Court "decline[d] to narrow the reach of § 101 where Congress has given us no indication that it intends this result." *Id*. at 145-46.

2. In the present case, the Federal Circuit was faced with a remarkably similar situation but reached the opposite conclusion, narrowing the scope of § 101 despite previously settled PTO practice and congressional acknowledgement of business method patents in § 273. The highly visible *State Street Bank* decision reflected the PTO's practice of issuing business method patents based on the "useful, concrete and tangible result" standard. *See, e.g.,* Examination Guidelines for Computer Related Inventions, 61 Fed. Reg. 7478, 7479 (Feb. 28, 1996); *Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility*, 1300 OFFICIAL GAZETTE

U.S. PAT. & TRADEMARK OFF., Nov. 22, 2005, at 142. The PTO Board affirmed the patentability of processes with no ties to machines or physical transformation. *See, e.g.*, *Ex parte Lundgren*, 76 U.S.P.Q.2d 1385, 2004 WL 3561262 (B.P.A.I. April 20, 2004).

In the ten years since *State Street Bank*, the PTO has issued more than 15,000 patents classified in the "business methods" technology group. As in *J.E.M. Ag Supply*, Congress has given no indication that it disagrees with the PTO practice of issuing patents for business methods under the *State Street Bank* standard. Several Congresses have considered bills to curtail business method patenting, but none has been enacted. *See* H.R. 5364, 106th Cong. (2000); H.R. 1332, 107th Cong. (2001); H.R. 5299, 108th Cong. (2004). As this Court reaffirmed in *J.E.M. Ag Supply*, where Congress has declined to place limitations on patent-eligible subject matter, the courts should not impose them. 534 U.S. at 145-46; *see also Diehr*, 450 U.S. at 182; *Chakrabarty*, 447 U.S. at 308.

3. While leaving § 101 untouched in light of these developments, Congress added § 273 to the Patent Act to provide a defense to infringement of patents for "method[s] of doing or conducting business." In *J.E.M. Ag Supply*, this Court found an amendment to a general provision of the Patent Act indicative of congressional recognition of patentable subject matter under § 101. 534 U.S. at 145. Contrary to this Court's guidance in *J.E.M. Ag Supply*, and despite settled PTO practice and congressional intent to the contrary, the Federal Circuit adopted a mandatory machine-or-transformation test for § 101 that is inconsistent with § 273.

Where there is ambiguity in statutory meaning, the "statutes must be construed in their entirety, so that the meaning of one provision sheds light upon the meaning of another." *J.E.M. Ag Supply*, 534 U.S. at 146 (Scalia, J., concurring). Here, in its effort to "clarify the standards applicable in determining whether a claimed method constitutes a statutory 'process' under § 101," Pet. App. 2a, the Federal Circuit erroneously restricted § 101 to exclude methods of doing business as set forth in § 273.

III. THE FEDERAL CIRCUIT'S DECISION IMPROPERLY LEGISLATES NEW PUBLIC POLICY AND DISRUPTS THE SETTLED EXPECTATIONS OF PATENT OWNERS AND INVENTORS

The decision below marks an abrupt change in the law, imposing "a new and far-reaching restriction on the kinds of inventions that are eligible to participate in the patent system." Pet. App. 60a (Newman, J., dissenting). Without new guidance from Congress or this Court, the Federal Circuit has retreated from its formerly technology-neutral position that "[t]he use of the expansive term 'any' in § 101 represents Congress's intent not to place any restrictions on the subject matter for which a patent may be obtained beyond those specifically recited in § 101 and the other parts of Title 35." *Alappat*, 33 F.3d at 1542. This reversal is contrary to "U.S. law and policy [that] have embraced advances without regard to their subject matter." Pet. App. 137a (Rader, J., dissenting). Moreover, sections of the Patent Act other than § 101, such as those requiring definite claiming and nonobviousness, are better-suited to prevent the issuance of vague or trivial patents sometimes labeled as "business methods."

1. The "machine-or-transformation" test changes the law by excluding "many of the kinds of inventions that apply today's electronic and photonic technologies, as well as other processes that handle data and information in novel ways. Such processes have long been patent eligible, and contribute to the vigor and variety of today's Information Age." Pet. App. 60a (Newman, J., dissenting). Innovation in the knowledge economy thrives beyond the traditional manufacturing and engineering fields and includes new and useful business-related processes, which may or may not be implemented on a machine.

This Court has long recognized that policy considerations should be left to Congress:

> An examination of the extent of the right to process patents requires consideration of the object and purpose of the Congress in exercising the constitutional power to protect for a limited period meritorious inventions or discoveries.
>
> [The 1793 statute] provides: 'Any person who has invented or discovered any new and useful art, machine, manufacture, or composition of matter, or any new and useful improvement thereof . . . may . . . obtain a patent therefor.'
>
> This is the statute which secures to inventors the right of protection; and it is not the province of the courts to so limit the statute as to deprive meritorious inventors of its benefits.

Expanded Metal Co., 214 U.S. at 382. More recently, the Court reaffirmed the proper role of courts in interpreting § 101:

> "[Our] individual appraisal of the wisdom or unwisdom of a particular [legislative] course . . . is

> to be put aside in the process of interpreting a statute." Our task, rather, is the narrow one of determining what Congress meant by the words it used in the statute; once that is done our powers are exhausted. Congress is free to amend § 101 . . . [b]ut, until Congress takes such action, this Court must construe the language of § 101 as it is.

Chakrabarty, 447 U.S. at 318 (internal citations omitted).

2. The machine-or-transformation test introduces uncertainties that "not only diminish the incentives available to new enterprise, but disrupt the settled expectations of those who relied on the law as it existed." Pet. App. 61a (Newman, J., dissenting). The mandatory "machine-or-transformation" test calls into question countless process patents issued before the PTO and Federal Circuit began applying this more restrictive test.

This Court has more than once admonished that "courts must be cautious before adopting changes that disrupt the settled expectations of the inventing community." *Festo*, 535 U.S. at 739 (citing *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 28 (1997)). Congressional action is required to change such well-settled rules because "[f]undamental alterations in these rules risk destroying the legitimate expectations of inventors in their property." *Id.* at 739.

Like the doctrine of equivalents issue in *Festo*, the patentability of processes that apply a fundamental principle to produce a useful result was settled. Business methods were patentable before *State Street Bank*, and they remain patentable in accordance with

Congress's intent, as evidenced by 35 U.S.C. § 273. *See, e.g., State Street Bank*, 149 F.3d at 1375 ("Since the 1952 Patent Act, business methods have been, and should have been, subject to the same legal requirements for patentability as applied to any other process or method."). Tens of thousands of patents have issued for business methods, software and information processes, and biotechnology methods. Just as this Court warned in *Festo*, "[t]o change so substantially the rules of the game now could very well subvert the various balances the PTO sought to strike when issuing the numerous patents which have not yet expired and which would be affected by our decision." 535 U.S. at 739 (quoting *Warner-Jenkinson*, 520 U.S. at 32 n.6). By requiring that process patents produce some physical transformation or be tied to a machine, the Federal Circuit has ventured into territory reserved for the legislature and disrupted the settled expectations of patent owners and inventors alike.

3. Critics of business method patents often invoke trivial patents to explain why patentable subject matter should be restricted. For example, Circuit Judge Mayer in dissent below argues for the reversal of *State Street Bank*, citing several "[p]atents granted in the wake of *State Street* [that] have ranged from the somewhat ridiculous to the truly absurd." Pet. App. 119a (Mayer, J., dissenting). These and other trivial patents may well deserve elimination from patent protection, but the machine-or-transformation test would not achieve that end. Many of the patents listed by Judge Mayer claim particular machines like databases and controller units, U.S. Patent No. 5,862,223 (filed July 24, 1996); point-of-sale terminals, U.S. Patent No. 6,119,099 (filed Aug. 26, 1997); and data processing systems and public

communication networks, U.S. Patent No. 6,014,643 (filed Aug. 26, 1996). Limiting patentable processes under § 101 to those that are tied to machines or transform subject matter will therefore do little to combat these types of patents.

Other requirements for patentability, such as novelty and nonobviousness, are better tools for eliminating trivial patents. Even if an invention covers patentable subject matter under § 101, it still must satisfy "the conditions and requirements of this title." 35 U.S.C. § 101. These "[c]onditions for patentability" include novelty, 35 U.S.C. § 102, and nonobvious subject matter, 35 U.S.C. § 103. These requirements provide the PTO and the courts with powerful tools to combat trivial patents. For example, as this Court explained in *KSR*, § 103 bars patents for improvements that result from mere "common sense" or "ordinary creativity." 550 U.S. at 420-21.

Members of this Court have expressed concern over business method patents for their "potential vagueness and suspect validity." *eBay*, 547 U.S. at 397 (Kennedy, J., concurring). Restricting § 101 with the mandatory machine-or-transformation test is not the best way to address these concerns. Rather, § 112 of the Patent Act requires precision in both a patent's specification and its claims. Under these requirements, "[t]he specification shall contain a written description of the invention, and of the manner and process of making and using it, in . . . full, clear, concise, and exact terms." 35 U.S.C. § 112, ¶ 1. Moreover, the patent application must include "one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." 35 U.S.C. § 112, ¶ 2.

When a fundamental principle is involved, this Court has explained that precise description is essential. "[T]he process through which the new property is developed and applied must be stated, with such precision as to enable an ordinary mechanic to construct and apply the necessary process." *Le Roy*, 14 How. (55 U.S.) at 175. Indeed, rather than lacking patentable subject matter, Samuel Morse's famed claim to the use of electro-magnetism for printing letters at a distance was rejected for being overbroad, which today would fall under § 112, not § 101. *Morse*, 15 How. (56 U.S.) at 113 ("The court is of the opinion that the claim is too broad, and not warranted by law."). Similarly, in *Benson*, the Court expressed concern over the broad nature of a claim involving a mathematical algorithm: "Here the 'process' claim is so abstract and sweeping as to cover both known and unknown uses of the BCD to pure binary conversion." 409 U.S. at 68. Proper application of the existing requirements of a detailed description and definite claiming are better suited than the machine-or-transformation test to prevent the issuance of vague patents for business methods as well as all other fields.

IV. THIS COURT SHOULD REAFFIRM THE "PRACTICAL APPLICATION" RULE FOR INVENTIONS INVOLVING FUNDAMENTAL PRINCIPLES

Over a long line of cases, this Court has explained that abstract ideas, laws of nature, and natural phenomena are not patentable under § 101, but a practical application of one of these principles may be patented. *See, e.g.*, *Diehr*, 450 U.S. at 187 ("It is now commonplace that an *application* of a law of nature or mathematical formula to a known structure or

process may well be deserving of patent protection."); *Funk Bros.*, 333 U.S. at 130 ("If there is to be invention from such a discovery, it must come from the *application* of the law of nature to a new and useful end.") (emphasis added). This Court's precedents analyzing the practical application of otherwise unpatentable principles stretch back more than 150 years. The "practical application" standard has been flexibly applied to inventions ranging from a process for modifying electronic current to transmit speech, *The Telephone Cases*, 126 U.S. 1 (1887), to a process for preserving beer, *New Process Fermentation Co. v. Maus*, 122 U.S. 413 (1887), and from Morse's telegraph dictionary, *O'Reilley v. Morse*, 15 How. (56 U.S.) 62 (1854), to genetically-engineered microorganisms that consume oil spills, *Diamond v. Chakrabarty*, 447 U.S. 303 (1980).

In certain cases, to be sure, the Court has found patent-eligible subject matter where a principle has been practically applied in either an apparatus or a chemical or manufacturing process. *See, e.g., Diehr*, 450 U.S. at 191-93; *Mackay Radio & Tel. Co. v. Radio Corp. of Am.*, 306 U.S. 86, 94 (1939). But the Federal Circuit majority mistakenly concluded that these conditions are not only sufficient, but necessary. Pet. App. 34a. This abruptly changed the law, unsettling the property rights of patent owners and inventors who had relied on years of this Court's jurisprudence.

A. This Court Has Applied Its "Practical Application" Standard Consistently With The Language Of § 101

To determine when a principle is applied in a patent-eligible manner, this Court has closely followed the language of § 101 itself. The Court has held that a principle is practically applied for the

purposes of patent eligibility when it is applied (1) to a new and useful result; (2) in a particular apparatus or structure; or (3) in a particular art or process. A tie to a machine or a transformative process is therefore sufficient, but not necessary, to demonstrate a patent-eligible practical application of a principle.

1. More than 150 years ago, Chief Justice Taney summarized the law of patent eligibility as follows: "[w]hoever discovers that a certain useful result will be produced, in any art, machine, manufacture, or composition of matter, by the use of certain means, is entitled to a patent for it." *Morse*, 15 How. (56 U.S.) at 119. Provided the inventor describes the "certain means" sufficiently, the Chief Justice continued, "the patent confers on him the exclusive right to use the means he specifies to produce the result or effect he describes . . . ." *Id.* The Court's emphasis on a useful result or effect made any machine or transformation irrelevant. "[I]t makes no difference . . . whether the effect is produced by chemical agency or combination; or by the application of discoveries or principles in natural philosophy known or unknown before his invention; or by machinery acting altogether upon mechanical principles." *Id.*

When later revisiting the scope of patentable subject matter, the Court relied on this summary as a "clear and exact summary of the law [that] affords the key to almost every case that can arise." *Tilghman*, 102 U.S. at 728. The Court in *Tilghman* expounded on the importance of a "useful result": "It is very certain that the means need not be a machine, or an apparatus; it may, as the court says, be a *process* . . . . Either may be the means of producing a useful result." *Id.* (emphasis in original). Over the years, this Court has repeatedly invoked a practical

application to a "new and useful end" as a measure of patent-eligibility. *See, e.g., Funk Bros.*, 333 U.S. at 130 ("If there is to be invention from such a discovery, it must come from the application of the law of nature to a new and useful end."); *New Process Fermentation Co.*, 122 U.S. at 427-28 ("[The process] is the performing of a series of acts upon the beer in the *kraeusen* stage, producing new and useful results in the art of making marketable beer.").

More recently, the Court in *Benson* held claims containing a mathematical formula unpatentable in part because they lacked a "particular end use." 409 U.S. at 64 ("The claims were not limited to any particular art or technology, to any particular apparatus or machinery, or to any particular end use."). There was some initial confusion over this point in the Court's next decision involving § 101. The majority in *Flook* reasoned that the claims in *Benson* had "a specific end use contemplated for the algorithm—utilization of the algorithm in computer programming," 437 U.S. at 590 n.11, but three dissenting Justices disagreed with this characterization, *id.* at 599 (Stewart, J. dissenting). Any confusion was resolved in *Diehr*, where the Court restated the proper test for subject matter containing a principle. "[W]hen a claim recites a mathematical formula (or scientific principle or phenomenon of nature), an inquiry must be made into whether the claim is seeking patent protection for that formula in the abstract. A mathematical formula as such is not accorded the protection of our patent laws." 450 U.S. at 191. The *Diehr* Court went on to explain the link between a practical application and the language of the Patent Act. A claim containing a mathematical formula satisfies § 101 when it "implements or applies that formula in a structure or process which, when considered as a

whole, is performing a function which the patent laws were designed to protect." *Id.* at 192.

2. It is well-settled that an application of a principle in an apparatus or product is patent-eligible. For example, when this Court considered the patentability of a radio antenna with wires angled according to a mathematical formula, the Court explained that, "[w]hile a scientific truth, or the mathematical expression of it, is not patentable invention, a novel and useful structure created with the aid of knowledge of scientific truth may be." *Mackay Radio*, 306 U.S. at 94. In another example, this Court found a genetically-engineered microorganism eligible for patenting under § 101 because the claim "is not to a hitherto unknown natural phenomenon, but to a non-naturally occurring manufacture or composition of matter—a product of human ingenuity 'having a distinctive name, character [and] use.'" *Chakrabarty*, 447 U.S. at 309-10 (quoting *Hartranft v. Wiegmann*, 121 U.S. 609, 615 (1887)).

3. An application of a principle in an art or process is likewise eligible for patenting. For example, Alexander Graham Bell discovered that changing the intensity of a continuous electric current to correspond exactly to changes in the density of the air caused by the sound of a voice enabled the sound to be transmitted over a distance. "This," wrote the Court, "was his art." *The Telephone Cases*, 126 U.S. at 532. When Bell "devised a way in which these changes in intensity could be made and speech actually transmitted . . . his art was put in a condition for practical use." *Id.* at 532-33. *The Telephone Cases* noted that the connection of a principle to a particular process was key to patentability. "The effect of [the *O'Reilley v. Morse*] decision was, there-

fore, that the use of magnetism as a motive power, without regard to the particular process with which it was connected in the patent, could not be claimed, but that its use in that connection could." 126 U.S. at 534.

Chemical and manufacturing processes applying fundamental principles have long enjoyed patent protection. For example, a process for separating elements of fats and oils was found patent-eligible because the inventor did not claim "a mere principle .... He only claims to have invented a particular mode of bringing about the desired chemical union between the fatty elements and water." *Tilghman*, 102 U.S. at 729. In another example, this Court observed that "[i]ndustrial processes [such as processes for curing rubber] have historically been eligible to receive the protection of our patent laws." *Diehr*, 450 U.S. at 184 & n.8.

B. Nonmanufacturing Processes Have Historically Been Eligible For Patenting Under The Statute

The patent system is not limited to manufacturing methods. Unlike the British system of monopolies, which was designed to establish manufacturing in England, the U.S. patent system was created to promote progress in all disciplines and not just methods of manufacturing.

1. The English patent system began as a way to attract industry to Great Britain's otherwise agrarian economy. Because its industry was "far behind the rest of the world," the Crown offered letters of protection to foreign artisans to establish their practice in England. Ramon A. Klitzke, *Historical Background of the English Patent Law*, 41 J. PAT. OFF. SOC'Y,

Sept. 1959, at 615, 623. These letters of protection devolved, however, into "secret negotiations for the purpose of attracting skilled foreigners into [the Crown's] own service." E. Wyndham Hulme, *The History of the Patent System Under the Prerogative and at Common Law*, 12 L. Q. REV. 141, 144 (1896). This practice continued through the 16th century, resulting in "flagrant misuse" including "granting of monopolies in industries which were already established in England." Klitzke, 41 J. PAT. OFF. SOC'Y, at 632-33.

To rein in the abuse of monopolies, the 1624 Statute of Monopolies was enacted to permit a limited 14-year monopoly only for the "true and first inventor" of "any manner of new manufacture." *See* D.F. Renn, *John Knox's Plan for Insuring Lives: A Patent of Invention in 1778*, 101 J. INST. ACTUARIES 285, 285 (1974). Consistent with its earliest goals of promoting new industry in England, the monopoly practice required that an invention be new, at least to the British economy. Edward C. Walterscheid, THE NATURE OF THE INTELLECTUAL PROPERTY CLAUSE: A STUDY IN HISTORICAL PERSPECTIVE 50-51 (1961).

2. The patents and copyrights clause of the Constitution empowers Congress "[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." U.S. CONST. art. I, § 8, cl. 8. Though little record exists of the drafting of the clause, the very language selected by the Constitution's framers indicates a broader purpose. Rather than adopting the more limited English "manner of manufacture" to describe subject matter eligible for protection, the framers chose "useful arts." Indeed, a committee of the Con-

stitutional Convention considered, but discarded, the phrase "useful machines and implements." Karl Fenning, *The Origin of the Patent and Copyright Clause of the Constitution*, 11 J. PAT. OFF. SOC'Y 438, 441-42 (1929). Scholars have opined that the departure from the "manufacture" limitation of the Statute of Monopolies indicates the framers' intent to "encourage [ ] science, broadly," unlike the British system. Karl B. Lutz, *Patents and Science: A Clarification of the Patent Clause of the U.S. Constitution*, 18 GEO. WASH. L. REV. 50, 53-54 (1949). One of the reasons for this departure from "manufacture" to "useful arts" was the recognition, "even in Great Britain that the phrase 'new manufactures' was an unduly limited object for a patent system, since it seemed to exclude new processes." *Id*.

Rather than simply establishing a manufacturing industry as in England, the U.S. patent system was designed to advance innovation in the public interest. James Madison wrote of the patents and copyrights clause:

> The utility of this power will scarcely be questioned. The copyright of authors has been solemnly adjudged, in Great Britain, to be a right of common law. The right to useful inventions seems with equal reason to belong to the inventors. The public good fully coincides in both cases with the claims of individuals.

THE FEDERALIST NO. 43, at 267 (James Madison) (H. Lodge ed. 1888). Thomas Jefferson, a vocal critic of monopolies in general, agreed that "[c]ertainly an inventor ought to be allowed a right to the benefit of his invention for some certain time. . . . Nobody wishes more than I do that ingenuity should receive a liberal encouragement." Letter to Oliver Evans (May

1807), 5 WRITINGS OF THOMAS JEFFERSON, at 75-76 (Washington ed.). After U.S. patents began to issue, Jefferson wrote, "[a]n act of Congress authorising the issuing of patents for new discoveries has given a spring to invention beyond my conception." Letter to Benjamin Vaughan (June 1790), 8 WRITINGS OF THOMAS JEFFERSON, at 50 (Andrew A. Lipscomb et al. eds., 1903).

3. Before there were specific procedures for granting patents, inventors applied directly to Congress for protection. The first Congress received fifteen petitions seeking protection for methods and machines such as "the principle of applying steam-power to the purpose of navigation," "an invention . . . for counting, with the utmost precision, the number of revolutions or vibrations of any wheel, or other part of any mechanical engine or machine," "lightning rods upon an improved construction," and "manufacturing shell buttons of different dimensions." P.J. Federico, *The First Patent Act*, 14 J. PAT. OFF. SOC'Y 237, 241-43 (1932).

One of the first petitions sought protection for methods of applying magnetic variation to determine longitude. John Churchman invented "several different methods by which the principles of magnetic variation are so explained, that the latitude of a place being given, its longitude may be easily determined" and petitioned Congress for the exclusive right to sell "spheres, hemispheres, maps, charts, and tables, on his principles of magnetism." *Id.* at 239. Congress found these methods deserving of protection because the inventor applied his ideas in practice. The congressional committee considering Mr. Churchman's invention found it

> confessedly of very high importance, and his ideas on the subject appear to be ingenious: That, with a view of applying them to practice, he has contrived a map and a globe, whereby to show the angles which are made by the intersection of the real and the magnetic meridians in different parts of the earth: That he is also engaged in constructing tables for determining the longitude at sea upon magnetic principles.

Id. The committee decided that "such efforts deserve encouragement, and that a law should pass to secure to Mr. Churchman, for a term of years, the exclusive pecuniary emoluments to be derived from the publication of these several inventions." *Id.* at 240. This example illustrates that the U.S. patent system has long embraced nonmanufacturing methods. Furthermore, when an invention involves a fundamental principle like magnetism, a "practical application" has long been the hallmark of patent eligibility.

4. The first Patent Act provided patent protection for "any useful art, manufacture, engine, machine, or device, or any improvement therein not before known or used." Patent Act of 1790, § 1, 1 Stat. 109. This act codified the framers' intent to provide protection to more than methods of manufacturing.

In 1793, Congress revised the Patent Act, expanding the categories of patentable subject matter to include a "composition of matter." "[A]ny person or persons, being a citizen or citizens of the United States, shall allege that he or they have invented any new and useful art, machine, manufacture, or composition of matter, or any new and useful improvement on any art, machine, manufacture, or composition of matter." Patent Act of 1793, § 1, 1 Stat. 318. These statutory categories remained unchanged until

1952, when the word "process" replaced "art." It is well-settled, however, that "a process . . . historically enjoyed patent protection because it was considered a form of 'art' as that term was used in the 1793 Act." *Diehr*, 450 U.S. at 182. As Circuit Judge Newman noted in dissent below, under the 1793 Act, patents have issued for financial methods such as "detecting and preventing counterfeiting, coin counting, [and] interest calculation tables" since the 18th century. Pet. App. 88a (Newman, J., dissenting).

V. THE FEDERAL CIRCUIT'S DECISION SHOULD BE REVERSED BECAUSE THE BILSKI APPLICATION CLAIMS PATENTABLE SUBJECT MATTER

A. Before The PTO And Federal Circuit Started Applying The Machine-Or-Transformation Test, Bilski's Claims Passed The Threshold Of § 101

Under the previously well-settled "practical application" standard, the PTO twice found that Bilski's claims contained patentable subject matter. After searching the prior art and examining the Bilski patent application, the patent examiner determined that some of the claims were patentable over the prior art but rejected others. (PTO Office Action, 3/4/99, pp. 2-4.) In response, the applicants amended the claims, and the examiner again allowed most of them but maintained the prior art rejections of the others. (PTO Office Action, 7/21/99, pp. 2-5.) Then, after twice allowing these claims, the PTO withdrew all of the remaining prior art rejections and instead rejected all of the claims under § 101 as being directed to nonstatutory subject matter. (PTO Office Action, 11/8/99, pp. 2-4.)

Since this Court's decision twenty-eight years ago in *Diehr*, the Federal Circuit has been the arbiter of statutory subject matter under § 101. Under a long line of that court's cases, including the en banc decision in *Alappat,* the Bilski claims would likely have been found patent-eligible. In *Alappat*, the Federal Circuit explained that "[t]he use of the expansive term 'any' in § 101 represents Congress's intent not to place any restrictions on the subject matter for which a patent may be obtained beyond those specifically recited in § 101 and the other parts of Title 35." 33 F.3d at 1542. Surveying *Benson*, *Flook*, and *Diehr*, the Federal Circuit took note of this Court's "practical application" standard. "[C]ertain types of mathematical subject matter, standing alone, represent nothing more than *abstract ideas* until reduced to some type of practical application . . . ." *Id.* at 1543. Accordingly, the court concluded that a rasterizer consisting of a series of circuits that perform mathematical calculations was "not a disembodied mathematical concept which may be characterized as an 'abstract idea,' but rather a specific machine to produce a useful, concrete, and tangible result." *Id.* at 1544.

In 1998, the Federal Circuit again acknowledged that "[t]he repetitive use of the expansive term 'any' in § 101 shows Congress's intent not to place any restrictions on the subject matter for which a patent may be obtained beyond those specifically recited in § 101." *State Street Bank*, 149 F.3d at 1373. The court also acknowledged the Supreme Court's warning that "it is improper to read limitations into § 101 on the subject matter that may be patented where the legislative history indicates that Congress clearly did not intend such limitations." *Id.* The court applied the "practical application" test to conclude

that a data processing system that transforms data representing discrete dollar amounts "constitutes a practical application of a mathematical algorithm, formula, or calculation, because it produces 'a useful, concrete and tangible result.'" *Id.*

One year later, in *AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352, 1358 (Fed. Cir. 1999), the Federal Circuit upheld the patentability of claims to a method for generating message records for inter-exchange telephone calls. The court reaffirmed that its reasoning in *Alappat* and *State Street Bank* was supported by this Court's decisions in *Diehr*, *Flook*, and *Benson*. Regarding *Alappat*, the *AT&T* court concluded:

> [T]he Alappat inquiry simply requires an examination of the contested claims to see if the claimed subject matter as a whole is a disembodied mathematical concept representing nothing more than a "law of nature" or an "abstract idea," or if the mathematical concept has been reduced to some practical application rendering it "useful."

Id. at 1357. Regarding the *State Street Bank* decision, the *AT&T* court wrote:

> The State Street formulation [is] that a mathematical algorithm may be an integral part of patentable subject matter such as a machine or process if the claimed invention as a whole is applied in a "useful" manner.

Id.

Under the Federal Circuit's jurisprudence interpreting this Court's "practical application" test, the Bilski patent application claims would likely have

been found patent-eligible. To the extent the claims involve mathematical calculations, the invention as a whole applies these calculations as part of a process for buying and selling energy commodities, resulting in a balancing of risk involved in the transactions. This practical application of mathematical concepts in a useful process is just the type embraced by the Federal Circuit until it adopted the mandatory machine-or-transformation test.

To rationalize departing from its line of cases interpreting a patent-eligible "practical application" of a fundamental principle, the Federal Circuit has attempted to distinguish the *State Street Bank* and *Alappat* cases as dealing with machines rather than processes. *See, e.g.*, Pet App. 23a n.18; *In re Comiskey*, 554 F.3d 967, 979 n.14 (Fed. Cir. 2009). This marks a reversal in the court's position, which previously maintained that, "for the purposes of a § 101 analysis, it is of little relevance whether [a] claim . . . is directed to a 'machine' or a 'process,' as long as it falls within at least one of the four enumerated categories of patentable subject matter." *State Street Bank*, 149 F.3d at 1372; *see also AT&T*, 172 F.3d at 1357 ("[W]e consider the scope of § 101 to be the same regardless of the form—machine or process—in which a particular claim is drafted.").

B. The Claimed Hedging Method Falls Within One Of The Enumerated Categories Of § 101

Bilski and Warsaw invented a new way to hedge the consumption risk associated with a commodity sold by a commodity provider at a fixed price for a given period. J.A. 11. All of the claims in their patent application recite methods, which are included in the statutory "process" category. 35 U.S.C. § 100(b)

("The term 'process' means process, art or method."). The plain language of § 101 extends patent eligibility to "any" new and useful process. 35 U.S.C. § 101. The meaning of the word "any" is clear, so no further inquiry is necessary under the statute. Except in rare and exceptional circumstances, "[w]hen we find the terms of a statute unambiguous, judicial inquiry is complete." *Garcia v. United States*, 469 U.S. 70, 75 (1984).

It is true that this Court held in *Flook* that "[t]he plain language of § 101 does not answer the question." 437 U.S. at 588. The *Flook* Court reasoned that a purely literal reading of § 101 was foreclosed by the holding in *Benson* that a method for converting binary-coded decimal numbers into binary numbers could not be patented. *Id.* at 588-89. There was some disagreement over this point, however, with the dissenters arguing that "[t]he recent case of [*Benson*] stands for no more than this long-established principle, which the Court there stated in the following words: 'Phenomena of nature, though just discovered, mental processes, and abstract intellectual concepts are not patentable, as they are the basic tools of scientific and technological work.'" *Flook*, 437 U.S. at 599 (Stewart, J., dissenting) (quoting *Benson*, 409 U.S. at 67). The point was settled when this Court later explained that its holdings in *Benson* and *Flook* "stand for no more than the[] long-established principles" that laws of nature, natural phenomena, and abstract ideas are excluded from patent protection. *Diehr*, 450 U.S. at 185.

C. Claim 1 Does Not Fall Within One Of This Court's Exceptions To Patent-Eligible Subject Matter

Claim 1 does not involve an abstract idea, law of nature, or natural phenomenon. Instead, claim 1 recites a method for buying and selling commodities among commodity consumers, commodity suppliers, and an intermediary called a commodity provider. To hedge the risk of fluctuations in consumption based, for example, on changing weather, the commodity provider offers the commodity at a fixed price to consumers, such as businesses and homeowners. *See supra* p. 7; *see also* J.A. 11-12. The commodity provider then identifies suppliers, called "market participants," that have a risk position counter to that of the energy consumers. The commodity provider enters into transactions with the market participants at a second fixed rate in order to balance the risk of the consumer transactions. *See supra* p. 7.

Some have argued that the claims cover the abstract idea of hedging. For example, the Federal Circuit found that claim 1 "would effectively preempt any application of the fundamental concept of hedging and the mathematical calculations inherent in hedging." Pet. App. 36a. To the contrary, claim 1 is limited to a specific series of steps involving the purchase and sale of commodities involving an intermediary commodity provider that manages consumption risk costs. The applicants do not claim to have invented the concept of hedging, nor does claim 1 cover all applications of hedging. A search of the PTO database reveals dozens of issued patents with the term "hedging" in the title or abstract that would not be covered by claim 1, related to hedging risk in sports wagers, insurance contracts, employee stock

options, and the like. Moreover, even if claim 1 does recite an abstract idea, it is still patentable because the abstract idea is practically applied, as shown by an analysis of claim 4.

D. Claim 4 Recites A Practical Application Of A Mathematical Equation

Claim 4 includes a mathematical relationship that is used to determine the fixed price for the consumer transactions in the claimed method. *See supra* pp. 7-8. It is well settled that a practical application of a mathematical formula can be patented. "A claim drawn to subject matter otherwise statutory does not become nonstatutory simply because it uses a mathematical formula . . . ." *Diehr*, 450 U.S. at 176; *see also Mackay Radio*, 306 U.S. at 94.

The mathematical formula of claim 4 is practically applied as part of a process for managing weather-related energy price risk costs. "[W]hen a claim containing a mathematical formula implements or applies that formula in a structure or *process* which, when considered as a whole, is performing a function which the patent laws were designed to protect . . . then the claim satisfies the requirements of § 101." *Diehr*, 450 U.S. at 192 (emphasis added). The method of claim 4 applies the mathematical formula in the practice of energy transactions between consumers, providers, and market participants. The patent application details how the fixed cost offered to consumers is determined based on various expenses related to the energy business, such as variable commodity costs, long distance transportation costs, and local delivery costs. J.A. at 12. To account for weather, the application describes a way to forecast weather-driven consumption using historical averages and statistical modeling techniques. *Id.* at 13.

The mathematical formula of claim 4 is practically applied to a useful result, so it is patentable. *Funk Bros.*, 333 U.S. at 130 ("If there is to be invention from . . . a discovery [of a law of nature], it must come from the application of the law of nature *to a new and useful end*.") (emphasis added). As claim 4 recites, the method is designed to manage weather-related energy price risk costs sold by an energy provider. The claim details a series of transactions for energy consumers to purchase energy at a fixed rate determined by a complex mathematical relationship among factors in the energy business. *See supra* pp. 7-8. To accomplish the end result of balancing the risk positions of the consumer transactions, the claim requires that commodity suppliers, called "market participants" are identified and engaged in transactions. *Id.*

Applying this Court's "practical application" test, the claims in the Bilski patent application satisfy § 101. All of the claims recite a "process," one of the four enumerated categories of patentable subject matter. To the extent the claims involve a mathematical principle, the principle is practically applied in a process to a useful end. Because the claims recite patentable subject matter under § 101, the Federal Circuit's decision should be reversed.

CONCLUSION

The judgment of the court of appeals should be reversed.

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No. 08-964

IN THE

Supreme Court of the United States

BERNARD L. BILSKI AND RAND A. WARSAW,
Petitioners,

v.

JOHN J. DOLL, ACTING UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND ACTING DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE,
Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

JOINT APPENDIX

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PETITION FOR CERTIORARI FILED JANUARY 28, 2009
CERTIORARI GRANTED JUNE 1, 2009

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PETITION APPENDIX

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

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EX PARTE BERNARD L. BILSKI AND RAND A. WARSAW
Application No. 08/833,892
Appeal No. 2002-2257

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RELEVANT DOCKET ENTRIES

DATE	NO.	GENERAL DESCRIPTION
4/10/97	1	Energy Risk Management Method Patent Application filed
3/4/99	5	Office Action objecting to claims 4-8; rejecting claims 1-3 under 35 U.S.C. § 102(e); and rejecting claim 9 under 35 U.S.C. § 103(a)
5/3/99	6	Applicants' Amendment amending claim 4 and adding new claims 10-11
7/21/99	7	Office Action allowing claims 4-8, 10, and 11; rejecting claims 1-3 under 35 U.S.C. § 102(b); and rejecting claim 9 under 35 U.S.C. § 103(a)
8/30/99	8	Applicants' Request for Reconsideration
11/8/99	9	Office Action rejecting claims 1-11 under 35 U.S.C. § 101

DATE	NO.	GENERAL DESCRIPTION
11/15/99	11	New Drawings
11/17/99	12	Applicants' Supplemental Amendment amending claim 4
1/6/00	13	Applicants' Response to Office Action
1/18/00	14	Applicants' Supplemental Response to Office Action
3/28/00	15	Final Office Action rejecting claims 1-11 under 35 U.S.C. § 101
4/10/00	16	Notice of Appeal to the Board of Patent Appeals and Interferences
5/23/00	17	Appellants' Brief on Appeal and Request for Oral Hearing
8/15/00	18	Examiner's Answer to Appellants' Brief on Appeal
9/25/00	19	Appellants' Reply Brief
4/3/03	22	Case heard before Administrative Patent Judges Barrett, Fleming, and Nagumo
3/8/06	24	Case heard before Administrative Patent Judges Frankfort, McQuade, Barrett, Bahr, and Nagumo
9/26/06	26	Decision on Appeal
11/22/06	27	Notice of Appeal to the United States Court of Appeals for the Federal Circuit

IN THE UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

No. 2007-1130
(Serial No. 08/833,892)

IN RE BERNARD L. BILSKI AND RAND A. WARSAW

RELEVANT DOCKET ENTRIES

DATE	NO.	GENERAL DESCRIPTION
1/11/07	1	Appeal docketed
3/12/07	5	Appellants Bernard L. Bilski and Rand A. Warsaw, brief filed
4/30/07	13	Amicus Curiae American Intellectual Property Law Association, brief filed
6/13/07	18	Appellee Director of the United States Patent and Trademark Office, brief filed
7/2/07	19	Appellants Bernard L. Bilski and Rand A. Warsaw, reply brief filed
7/6/07	20	Joint Appendix filed
10/1/07	27	Case heard before Circuit Judges Bryson, Clevenger, and Moore
2/15/08	30	Order granting, sua sponte, a hearing en banc and instructing parties to submit supplemental briefs

DATE	NO.	GENERAL DESCRIPTION
3/6/08	32	Appellants Bernard L. Bilski and Rand A. Warsaw, supplemental brief filed
3/6/08	34	Appellee Director of the United States Patent and Trademark Office, supplemental brief filed
4/3/08	88	Amicus Curiae Accenture, brief filed
4/3/08	109	Amicus Curiae Accenture, corrected brief filed
4/3/08	45	Amicus Curiae American Civil Liberties Union, brief filed
4/3/08	49	Amicus Curiae Koninklijke Philips Electronics N.V., brief filed
4/3/08	119	Amicus Curiae Professor Lee A. Hollaar, brief filed
4/4/08	105	Amicus Curiae End Software Patents, brief filed
4/4/08	57	Amicus Curiae Law Professor Kevin Emerson Collins, brief filed
4/4/08	54	Amici Curiae Reserve Management Corporation, PCT Capital LLC, Rearden Capital Corp. and Sales Optimization Group, brief filed
4/4/08	63	Amicus Curiae Washington State Patent Law Association, brief filed
4/7/08	108	Amicus Curiae American Express Company, brief filed

DATE	NO.	GENERAL DESCRIPTION
4/7/08	96	Amicus Curiae American Institute of Certified Public Accountants, brief filed
4/7/08	118	Amicus Curiae American Intellectual Property Law Association, brief filed
4/7/08	125	Amici Curiae Bank of America Corp. and Financial Services Industry, brief filed
4/7/08	122	Amicus Curiae Biotechnology Industry Organization, brief filed
4/7/08	106	Amicus Curiae Boston Patent Law Association, brief filed
4/7/08	104	Amicus Curiae Business Software Alliance, brief filed
4/7/08	126	Amicus Curiae Center for Advanced Study and Research on Intellectual Property (CASRIP) of the University of Washington School of Law, supplemental brief filed
4/7/08	120	Amicus Curiae CFPH, LLC, brief filed
4/7/08	116	Amicus Curiae Computer & Communications Industry Association, brief filed
4/7/08	124	Amici Curiae Consumers Union, Electronic Frontier Foundation, and Public Knowledge, brief filed

DATE	NO.	GENERAL DESCRIPTION
4/7/08	121	Amici Curiae Dell Inc., Microsoft Corporation, and Symantec Corporation, brief filed
4/7/08	115	Amici Curiae Eli Lilly and Company and The Association of American Medical Colleges, brief filed
4/7/08	127	Amicus Curiae Federal Circuit Bar Association, brief filed
4/7/08	103	Amicus Curiae Fédération Internationale Des Conseils En Propriété Industrielle, brief filed
4/7/08	202	Amicus Curiae Gregory Aharonian, brief filed
4/7/08	72	Amicus Curiae Houston Intellectual Property Law Association, brief filed
4/7/08	107	Amicus Curiae Intellectual Property Owners Association, brief filed
4/7/08	69	Amicus Curiae International Business Machines Corporation, brief filed
4/7/08	91	Amicus Curiae Jason V. Morgan, brief filed
4/7/08	123	Amici Curiae Pacific Life Insurance Company, The Hartford Financial Services Group, Inc., and John Hancock Life Insurance Company (U.S.A.), brief filed
4/7/08	113	Amicus Curiae Red Hat, Inc., brief filed

DATE	NO.	GENERAL DESCRIPTION
4/7/08	79	Amicus Curiae Regulatory Data-Corp, Inc., brief filed
4/7/08	102	Amicus Curiae Roberta J. Morris, Esq., Ph.D., brief filed
4/7/08	114	Amicus Curiae SAP America, Inc., brief filed
4/7/08	117	Amicus Curiae Software & Information Industry Association, brief filed
4/7/08	110	Amici Curiae Ten Law Professors, brief filed
4/7/08	111	Amicus Curiae 22 Law and Business Professors, brief filed
4/7/08	128	Amicus Curiae William Mitchell College of Law Intellectual Property Institute, brief filed
4/7/08	112	Amici Curiae Yahoo! Inc. and Professor Robert P. Merges, brief filed
4/14/08	214	Amicus Curiae American Express Company, motion for leave to participate in oral argument
4/15/08	213	Amici Curiae Bank of America Corp. and Financial Services Industry, motion for leave to participate in oral argument
4/16/08	226	Amici Curiae Yahoo! Inc. and Professor Robert P. Merges, motion for leave to participate in oral argument

DATE	NO.	GENERAL DESCRIPTION
4/17/08	229	Amicus Curiae American Intellectual Property Law Association, motion for leave to participate in oral argument
4/18/08	230	Order directing all motions by amici seeking oral argument to be filed by 4/23/08
4/18/08	231	Amici Curiae Reserve Management Corporation, PCT Capital LLC, Rearden Capital Corp. and Sales Optimization Group, motion for leave to participate in oral argument
4/22/08	232	Amicus Curiae Business Software Alliance, motion for leave to participate in oral argument
4/23/08	233	Amicus Curiae Regulatory DataCorp International, LLC, motion for leave to participate in oral argument
4/23/08	234	Amicus Curiae Eli Lilly and Company, motion for leave to participate in oral argument
4/23/08	235	Amici Curiae Dell Inc., Microsoft Corporation, and Symantec Corporation, motion for leave to participate in oral argument
4/23/08	236	Amicus Curiae CFPH, LLC, motion for leave to participate in oral argument

DATE	NO.	GENERAL DESCRIPTION
4/25/08	237	Order granting motions for leave to participate in oral argument by Amicus Curiae Regulatory Data-Corp International, LLC and Amici Curiae Bank of America Corp. and Financial Services Industry, each party to be given 10 minutes, and denying all other motions for oral argument
5/8/08	251	Case heard en banc before Chief Judge Michel and Circuit Judges Lourie, Schall, Bryson, Gajarsa, Linn, Dyk, Prost, Newman, Mayer, Rader, and Moore
10/30/08	257	Judgment entered, affirmed
10/30/08	256	Opinion for the Court filed by Chief Judge Michel. Concurring opinion by Circuit Judge Dyk with whom Circuit Judge Linn joins. Dissenting opinion by Circuit Judge Newman. Dissenting opinion by Circuit Judge Mayer. Dissenting opinion by Circuit Judge Rader.
12/22/08	255	Mandate issued to the Patent and Trademark Office

In the United States Patent and Trademark Office

U.S. Patent Application No. 08/833,892 entitled "Energy Risk Management Method," filed April 10, 1997

TITLE

ENERGY RISK MANAGEMENT METHOD

BACKGROUND OF THE INVENTION

Related Application

This application claims the benefit of U.S. Provisional Application No. 60/015,756, filed April 16, 1996.

1. Field of the Invention

The invention herein relates to methods for managing the consumption risk costs of a commodity sold at a fixed price and, more particularly, methods for managing the weather-related risks associated with energy pricing.

2. Brief Description of the Prior Art

Energy consumers nationwide suffer substantial cost risk from month-to-month and year-to-year. As an illustration, the NYMEX contract for natural gas has been the most volatile contract ever traded with near-term volatilities regularly exceeding 40 to 70%, well above that for all other commodities traded. For budget-sensitive customers, actual expenditures for energy can easily be 20% or more above or below what was budgeted.

There are two key sources for the energy cost risk facing these customers: price risk and consumption risk. In natural gas, price risk is evidenced in the volatilities of the NYMEX contract and other over-the-counter location-specific instruments (swaps, basis swaps, forwards). In electricity, the new NYMEX electricity contract is showing at least as much volatility as natural gas.

Because of the proliferation in price risk management tools over the last 5 years, though, price risk is now easily managed in energy markets. Consumption risk, on the other hand, is not currently managed in energy markets. Accordingly, there is a need for a fixed bill product to manage total energy cost risk including the consumption risk.

SUMMARY OF THE INVENTION

The risk management method of the present invention is based upon a fixed bill product which essentially guarantees the customer a normal winter and locks in a payment stream (a fixed energy bill) for whatever period the consumer wishes. This is not the "budget bill" offered by many local distribution companies, wherein the consumer pays a temporary fixed payment but must make a full accounting in a subsequent period in the event actual consumption or prices are different than what has been charged for.

The fixed bill method of the present invention manages the risk-associated costs of a commodity sold by a commodity provider at a fixed price. Such risk-associated costs include the weather-related costs of a fixed-price energy bill. However, it is to be distinctly understood that the present method can be used for any commodity to manage consumption risk in a fixed bill price product. The commodity provider in-

itiates a series of transactions with consumers of the commodity wherein the consumers purchase the commodity at a fixed rate based upon historical averages. The fixed rate corresponds to a risk position of the consumers. The commodity provider then identifies market participants for the commodity who have a counter-risk position to that of the consumers. The commodity provider then initiates a series of transactions with such market participants at a second fixed rate such that the series of market participant transactions balances the risk position of the series of consumer transactions.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The present invention can best be illustrated in connection with the management of weather-related risks associated with fixed bill energy pricing. A consumer's unhedged energy bill for a given period i can be shown as in Equation (1) below:

(1) $\text{Energy Bill}_i = F_i + (C_i + T_i + LD_i) \times Q_i$

wherein,

F_i = fixed costs in period i,

C_i = variable commodity costs in period i,

T_i = variable long distance transportation costs in period i,

LD_i = variable LDC or local delivery costs in period i, and

Q_i = consumption in period i.

In Equation (1), the consumer could easily fix a portion of the costs by using futures or over-the-counter instruments to lock in a price on the portion of consumption that is known with certainty. For

instance, any energy consumption that is not weather driven may be highly predictable. A consumer could then fix the cost of this portion of total consumption with confidence that an effective hedge is achieved. To the extent, however, that the consumption is weather driven, the consumer cannot confidently lock in a price.

An industrial consumer with baseload process requirements can achieve all the hedge required by simply locking in prices. A school district or hospital with significant unknown weather-driven requirements cannot reduce risk with the same hedge; a large portion of its risk is tied up in the weather risk as opposed to the price risk. For these reasons, one can think of the consumption variable, Q_i, as in Equation (2).

(2) $Q_{i,1} = f(B_i, W_{i,1})$

wherein,

B_i = base (predictable) consumption in period i, and

$W_{i,1}$ = a location-specific weather indicator, either $HDD_{i,1}$ for heating degree days during the ith period and location l, or CDD_i for cooling degree days for the ith period at location l. For a given day, one takes 65 degrees less the average daily temperature at a given location to find the number of heating degree days (HDD) for that day. Similarly, one takes the average daily temperature at the same location less 65 degrees to find the number of cooling degree days (CDD) for that day. Both numbers are by definition non-negative.

For a given consumer, Equation (2) can be estimated with ordinary least squares in a model of the form:

(3) $Q_{i,1} = \alpha + \beta W_{i,1} + \epsilon_i$

Since goodness of fit is the objective in estimating Equation (3), the results of Equation (3) can be variously estimated with non-log, semi-log or log-log forms.

Next, an assumption is made that $W_{i,1} \sim N(\mu,\sigma)$, that is, that the HDD or CDD variable of the location-specific weather indicator is normally distributed with mean μ and standard deviation σ.

With the assembling of the various estimations and identities the fixed bill estimate for a consumer can be shown as in Equation (4).

(4) Fixed Bill = $F_i + [(C_i + T_i + LD_i) \times (\alpha + \beta E(W_1)]$

Equation 4 assumes that the provider's margin is included in C_i.

As Equation (4) shows, the usage level, once estimated for a given consumer in a given location, is now fixed as an expected value for purposes of defining consumption.

The model presented above identifies a conceptual approach to understanding how a fixed bill transaction might be calculated for a consumer. In practice, this concept is only a starting point. A provider of fixed bill transactions will be much like a provider of other risk management tools in that the risk that is extracted from consumers must be laid off with counterparties that have an opposite appetite for the risk. All risk management markets are made up of parties with appetites for length positions and parties with balancing appetites for short positions. Thus, the provider will have the goal of matching "shorts" (sales to consumers) with length while maintaining a margin between these positions.

The natural counterparty for the energy transaction discussed above is a reasonably collocated distribution company who has the opposite economic appetite for weather patterns. Where consumers are concerned about colder than normal winters, distribution companies are concerned about warmer than normal winters. The opposite risk positions make a risk management trade possible. The provider's goal then is to find a distribution company that is willing to pay an amount of money when the winter is colder than normal in return for payments to the utility when the winter is warmer than normal. This is a swap.

At the simplest level, once Equation (4) is approximated for a given consumer one can divide the variable cost portion of the calculated Fixed Bill by the E(HDD) or E(CDD) to obtain the provider's marginal cost per HDD or CDD. Given this, the provider would search for a distribution company interested in the swap that satisfies the following condition:

(5) ∂ Costs/∂/HDD_l = ∂ Swap Receipts/∂HDD_l

Condition (5) simply says that when a provider's costs increase with actual heating degree days at the lth location he would want a precisely offsetting swap receipt to cover the marginal weather-driven cost.

Laying off risk for a fixed bill transaction, however, is vastly different than it is for most risk management products. This results because (a) weather is not a fungible commodity, and (b) the counterparties will often desire risk protection at different, imperfectly correlated weather locations. Contrasted with a situation like the NYMEX contract where a provider could establish equal and exactly offsetting positions the provider retains some unhedgeable weather risk

when short positions are established at one location and long positions are established at different locations. The best the provider can do is build a book around reasonably correlated weather patterns.

In theory, one could evaluate the economically weighted joint probability density function $W_{i,1} \sim N(\mu,\sigma)$ parametrically for all locations in the provider's book. However, this proves quickly intractable as the number of locations increases to approximately three. Rather, the steps taken in pricing a deal, and in managing the portfolio, involve the following steps:

1. evaluate the usage and all costs for a prospective deal;

2. perform a Monte Carlo simulation across all deals at all locations in the book over the last 20 years of weather patterns and establish the payoffs from each deal under each historical weather pattern;

3. assume that the summed payoffs are distributed $N(\mu,\sigma)$;

4. perform one-tail tests to determine the marginal likelihood of losing money on the deal and the marginal likelihood of retaining at least the design margin included in the initial evaluation of Equation (4);

5. if the transaction as initially priced leads to a reduced expected margin or increases the likelihood of a loss add more margin to Equation (4) and vice versa until the expected portfolio margin and the likelihood of portfolio loss is acceptable.

With the fixed bill thus calculated for a consumer several risks remain for the provider of such service:

1. How does the provider allow for the fact that the consumer may be encouraged to become less efficient

in its utilization of energy now that it can consume all it wants for a fixed payment?

2. How does the provider allow for price volatility, apart from the weather volatility?

A key feature of the final consumer agreement is that energy use per HDD or CDD remains within a band established as the annual standard error of the intercept in the usage estimation. This is typically a band with a width of 2% or so. In the event the consumer uses more energy per degree day than shown historically it is penalized. And in the event the consumer uses less energy per degree day it is refunded dollars, regardless of whether the energy pattern is warmer or colder than expected and used in the fixed bill calculation.

Finally, embedded in the deal pricing steps above, the commodity price volatility within the fixed bill must be managed. If only the expected value is purchased one can guarantee that it will have too little or too much fixed price energy available for the customer. A rule that seems to work in this regard is for the provider to purchase forward, fixed price energy at one standard deviation below the expected consumption level for the consumer, and to purchase at-the-money calls on the next two standard deviations of consumption. This strategy covers 86% of the possible weather pattern events, with minimal but symmetric outliers beyond what is financially covered. The provider will, of course, want full physical coverage on all possible weather patterns.

While the variable C_i implicitly contains fixed forward prices, there is no reason why the commodity price component of the transaction could not be priced as a pure option or a price range. In the call

option formulation the weather itself would be fixed but pricing could be adjusted to allow the consumer to benefit if commodity prices fall over the course of the transaction. This, of course, would imply an option payment by the consumer up front. With a price range feature the consumer would give back a floor to the provider of equal value to offset the cost of the call option. Here then the commodity price would not go above the call strike and would fall until the market price hit the put strike on the lower end. Other option-based structures could include a sharing of price increases and/or decreases with the weather fixed.

Also, through the Monte Carlo simulation process, one could establish a cap on the weather. Here, the pricing process would run as follows:

1. evaluate the usage equation and all costs for a prospective deal;

2. perform a Monte Carlo simulation across all deals at all locations in the book over the last 20 years of weather patterns and establish the payoffs from each deal under each historical weather pattern assuming that the price in the deal being priced floats down when the weather is below normal;

3. assume that the summed payoffs are distributed $N(\mu,\sigma)$;

4. perform one-tail tests to determine the marginal likelihood of losing money on the deal and the marginal likelihood of retaining at least the design margin included in the initial evaluation of Equation (4);

5. continue repricing the margin in the transaction until the expected portfolio margin and likelihood of portfolio loss is acceptable;

6. established in this way the margin becomes essentially the cost of a call option on weather at location l.

A model is presented that allows for the full risk management of a budget sensitive energy consumer. Energy consumers have heretofore been able to manage price risk but not overall cost risk. This is because the weather pattern has been previously unmanageable. With a combination of price risk management and the ability to "lay off" weather risk to natural counterparties an energy provider can provide complete energy cost risk management.

While certain present preferred embodiments have been shown and described, it is distinctly understood that the invention is not limited thereto but may be otherwise embodied within the scope of the following claims.

CLAIMS:

1. A method for managing the consumption risk costs of a commodity sold by a commodity provider at a fixed price comprising the steps of:

(a) initiating a series of transactions between said commodity provider and consumers of said commodity wherein said consumers purchase said commodity at a fixed rate based upon historical averages, said fixed rate corresponding to a risk position of said consumers;

(b) identifying market participants for said commodity having a counter-risk position to said consumers; and

(c) initiating a series of transactions between said commodity provider and said market participants at a second fixed rate such that said series of market participant transactions balances the risk position of said series of consumer transactions.

2. The method of claim 1 wherein said commodity is energy and said market participants are transmission distributors.

3. The method of claim 2 wherein said consumption risk is a weather-related price risk.

4. The method of claim 3 wherein the fixed price for the consumer transaction is determined by the relationship:

Fixed Bill Price = $F_i + [(C_i + T_i + LD_i) \times (\alpha + \beta E(W_l)]$ wherein,

F_i = fixed costs in period i;

C_i = variable costs in period i;

T_i = variable long distance transportation costs in period i;

LD_i = variable local delivery costs in period i;

$E(W_l)$ = estimated location-specific weather indicator in period i; and α and β are constants.

5. The method of claim 4 wherein said location-specific weather indicator is at least one of heating degree days and cooling degree days.

6. The method of claim 4 wherein said energy provider seeks a swap receipt to cover the marginal weather-driven cost.

7. The method of claim 4 wherein the energy price is determined by the steps of:

(a) evaluating the usage and all costs for a prospective transaction;

(b) performing a Monte Carlo simulation across all transactions at all locations for a predetermined plurality of years of weather patterns and establishing the payoffs from each transaction under each historical weather pattern;

(c) assuming that the summed payoffs are normally distributed;

(d) performing one-tail tests to determine the marginal likelihood of losing money on the deal and the marginal likelihood of retaining at least the design margin included in the initial evaluation of the fixed bill price; and

(e) adjusting the margin of the fixed bill price if the transaction as initially priced leads to a reduced expected margin or increases the likelihood of a loss until the expected portfolio margin and the likelihood of portfolio loss is acceptable.

8. The method of claim 4 wherein a cap on the weather-influenced pricing is established by the steps of:

(a) evaluating the usage equation and all costs for a prospective transaction;

(b) performing a Monte Carlo simulation across all transactions at all locations for a pre-

determined plurality of years of weather patterns and establishing the payoffs from each transaction under each historical weather pattern assuming that the price in the transaction being priced floats down when the weather is below normal;

(c) assuming that the summed payoffs are normally distributed;

(d) performing one-tail tests to determine the marginal likelihood of losing money on the transaction and the marginal likelihood of retaining at least the design margin included in the initial evaluation of the fixed price bill;

(e) continuing to reprice the margin in the transaction until the expected portfolio margin and likelihood of portfolio loss is acceptable; and

(f) establishing the margin as a call option on weather at a predetermined location.

9. The method of claim 1 wherein said commodity provider seeks a swap receipt to cover the price risk of the consumer transaction.

ABSTRACT

A method is provided for managing the risk-associated costs of a commodity sold by a commodity provider at a fixed price. Such risk-associated costs include the weather-related costs of a fixed-price energy bill. The commodity provider initiates a series of transactions with consumers of the commodity wherein the consumers purchase the commodity at a fixed rate based upon historical averages. The fixed rate corresponds to a risk position of the consumers.

The commodity provider then identifies market participants for the commodity who have a counter-risk position to that of the consumers. The commodity provider then initiates a series of transactions with the market participants at a second fixed rate such that the series of market participant transactions balances the risk position of the series of consumer transactions.