UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TESLA, INC.
Petitioner,

v.

GRAPHITE CHARGING COMPANY, LLC
Patent Owner.

Case No. IPR2024-00388

U.S. Patent No. 8,291,243

PETITIONER'S NOTICE OF APPEAL

Pursuant to 35 U.S.C. §§ 141(c), 142 and 37 C.F.R. §§ 90.2(a), 90.3(a), notice is hereby given that Petitioner Tesla, Inc. ("Petitioner") appeals to the United States Court of Appeals for the Federal Circuit from the Final Written Decision entered by the Patent Trial and Appeal Board ("Board") on August 19, 2025 ("Final Written Decision," a copy of which is attached hereto as Exhibit A), and from all underlying orders, decisions, rulings, and opinions related to the Final Written Decision.

For the limited purpose of providing the Director of the United States Patent and Trademark Office with the information required under 37 C.F.R. § 90.2(a)(3)(ii), Petitioner further indicates that the issues on appeal may include, without limitation:

- Whether the Board erred in construing claim terms in U.S. Patent No. 8,291,234, including "reducing a current amount of consumption [of electric power]."
- Whether the Board erred in (i) interpreting the disclosures in Wang (WO 2006/096854), Current Supply Demand Report, Alberta Electric Supply Operator (AESO), and/or Cooley (US 9,052,904) in view of the record evidence and/or (ii) understanding the petition's arguments based on the prior art.
- Whether the Board erred in holding Petitioner failed to show an adequate motivation to combine.
- Whether the Board erred in its determination that no challenged claim

is unpatentable.

This Notice of Appeal is timely pursuant to 37 C.F.R. § 90.3, having been duly filed within 63 days after the Final Written Decision.

Pursuant to 35 U.S.C. § 142 and 37 C.F.R. § 90.2(a), this Notice of Appeal is being filed with the Director of the U.S. Patent and Trademark Office, and a copy of this Notice is being concurrently electronically filed with the Patent Trial and Appeal Board. In addition, a copy of the Notice, along with the required docketing fee, is being electronically filed with the Clerk of Court for the United States Court of Appeals for the Federal Circuit.

Dated: October 20, 2025

Respectfully Submitted,

/ Alexander B. Stein /

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CERTIFICATE OF SERVICE

In accordance with 37 C.F.R. § 90.2(a)(1) and § 104.2, I hereby certify that on October 20, 2025, in addition to being filed electronically through the Board's P-TACTS System, the original version of the foregoing, Petitioner's Notice of Appeal was filed by USPS Priority Mail Express on the Director of the United States Patent and Trademark Office, at the following address:

Office of the Solicitor
United States Patent and Trademark Office
Mail Stop 8
P.O. Box 1450
Alexandria, Virginia 22313–1450

I hereby certify that on October 20, 2025, a true and correct copy of the foregoing, Petitioner's Notice of Appeal, along with a copy of the Final Written Decision, was filed electronically with the Clerk's Office of the United States Court of Appeals for the Federal Circuit, at the following address:

Clerk of Court
United States Court of Appeals for the Federal Circuit
717 Madison Place, N.W., Room 401
Washington, DC 20439

Pursuant to 37 C.F.R. § 42.6(e), the undersigned certifies that on October 20, 2025, a complete and entire copy of this Petitioner's Notice of Appeal was served by FedEx Priority Overnight Delivery and via email, to the Patent Owner at the following addresses:

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Dated: October 20, 2025

Respectfully Submitted,

/ Alexander B. Stein /
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EXHIBIT A

Trials@uspto.gov
571-272-7822

Paper 49
Date: August 19, 2025

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TESLA, INC.,
Petitioner,

v.

GRAPHITE CHARGING COMPANY LLC,
Patent Owner.

IPR2024-00388
Patent 8,291,243 B2

Before KEN B. BARRETT, MIRIAM L. QUINN,
and MATTHEW S. MEYERS, *Administrative Patent Judges*.

BARRETT, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining No Challenged Claims Unpatentable
Denying In Part and Dismissing In Part Patent Owner's Motion to Exclude
Denying Patent Owner's Motion to Strike
35 C.F.R. § 318(a), 37 C.F.R. § 42.64

I. INTRODUCTION

A. Background and Summary

Tesla, Inc. ("Petitioner")[1] filed a Petition requesting *inter partes* review of U.S. Patent No. 8,291,243 B2 ("the '243 patent," Ex. 1001). Paper 2 ("Pet."). The Petition challenges the patentability of claims 1–20 of the '243 patent. We instituted an *inter partes* review of all challenged claims on all proposed grounds of unpatentability. Paper 15. Graphite Charging Company, LLC ("Patent Owner")[2] filed a Response to the Petition. Paper 24 ("PO Resp."). Petitioner filed a Reply (Paper 28, "Pet. Reply") and Patent Owner filed a Sur-reply (Paper 30, "PO Sur-reply").

Patent Owner filed a Motion to Exclude (Paper 35), to which Petitioner filed an Opposition (Paper 38), and Patent Owner filed a Reply (Paper 40). Patent Owner filed a Motion to Strike (Paper 37), to which Petitioner filed an Opposition (Paper 39). Both parties filed objections to demonstrative exhibits for oral argument. Papers 44, 46.

An oral hearing was held on May 28, 2025, and a transcript of the hearing is included in the record. Paper 48 ("Tr.").

This Final Written Decision is entered pursuant to 35 U.S.C. § 318(a). For the reasons discussed below, we determine that Petitioner has *not* shown by a preponderance of the evidence that claims 1–20 of the '243 patent are unpatentable. Additionally, Patent Owner's Motion to Exclude is denied in part and dismissed in part, and Patent Owner's Motion to Strike is denied. And, we overrule both parties' objections to demonstrative exhibits.

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[1] Petitioner identifies Tesla, Inc. as the real party in interest. Pet. 1.
[2] Patent Owner identifies Graphite Charging Company, LLC as the real party in interest. Paper 4, 2; Paper 8, 2.

B. Related Proceedings

Both parties identify, as a matter involving or related to the '234 patent, *Graphite Charging Company LLC v. Tesla, Inc.*, No. 1:23-cv-00925 (W.D. Tex.). Pet. 1; Paper 4, 2; Paper 8, 2. That case has been transferred to the United States District Court for the Northern District of California, and is captioned *Graphite Charging Company LLC v. Tesla, Inc.*, No. 3:24-cv-02717 (N.D. Cal.). *See, e.g.*, Paper 8, 2; Ex. 2008 (Order granting the parties' joint motion (as amended by the Court) to stay pending resolution of the *inter partes* review and petition for mandamus).

As both parties indicate, the '243 patent currently is the subject of *Ex Parte* Reexamination Control No. 90/019,303. Pet. 1, Paper 4, 2; Paper 8, 2. The Board entered an order granting Petitioner's motion to stay the reexamination pending the termination or completion of this *inter partes* review. Paper 22.

C. The '243 Patent

The '243 pertains to "methods, systems, program products and devices for adapting the power consumption of a computational device in response to environmental conditions." Ex. 1001, 1:6–9. The '243 patent explains that computer systems may impose large burdens on a power grid. *Id.* at 1:31–32. "To reduce energy usage, manufacturers have developed numerous power-efficient technologies: for example, processor speeds and/or use can be adaptively reduced or stopped when the processor is not heavily used, monitors and peripherals can be put in a reduced power-consumption mode, etc." *Id.* at 1:36–41. According to the '243 patent, such mechanisms were only configured to operate on a localized basis and done in response to local considerations. The '243 patent states that "[t]otal

energy or environmental savings realized by such processes may be nullified or insignificant when considered on an overall (e.g. annual) basis when energy used by the device in more-active or higher-powered uses is acquired during peak energy demand times, thus utilizing the highest-cost or most environmentally-degrading energy available to the device." *Id.* at 1:49–55.

The '243 patent states that it teaches methods "for adapting the power consumption of a computer system to environmental conditions, including local and global demands on a power grid, by monitoring environmental conditions and appropriately adjusting the power demand of the computer system and/or of a physical infrastructure that houses the computer system." *Id.* at 2:56–62. "Operating environmental condition data relevant to the generation of electric power is acquired from an operating environment feed and analyzed to determine a high electric power demand indication." *Id.* at 1:61–64. "If the analyzing determines a high electric power demand indication, then a computational device automatically reduces an amount of electric power consumption." *Id.* at 1:64–67.

> Examples of feeds, information and data appropriate to function as environmental data inputs . . . or as power-setting indicators . . . include a spot price of electricity, a rate of change of price of electricity, weather conditions, time of day, a facility (e.g. a household, building or company) energy use, census data associated with a specified energy use or demand, as well as other data relevant to energy costs.

Id. at 4:50–57.

D. Illustrative Claim

Of the challenged claims of the '243 patent, claims 1, 11, 15, and 18 are independent claims. Claim 1, reproduced below with bracketed annotations inserted, is illustrative.

> 1. [1Pre] A method for adapting the power consumption of a computational device in response to environmental conditions, comprising:
>
> [1A] acquiring operating environmental condition data relevant to the generation of electric power in a power grid system from an operating environment feed input;
>
> [1B] analyzing the operating environmental condition data to determine an indication of a high demand for electric power from the power grid system; and
>
> [1C] a computational device automatically reducing a current amount of consumption of electric power from the power grid system by the computational device if the analyzing determines the high electric power demand indication.

Ex. 1001, 10:59–11:5.

E. Evidence

Petitioner relies on the following references:

Name	Reference	Exhibit No.
Wang	WO 2006/096854 A2; published Sept. 14, 2006	1005
AESO Report	Current Supply Demand Report, Alberta Electric Supply Operator (AESO), Feb. 17, 2005	1006
Cooley	US 9,052,904 B1; filed Sept. 5, 2008; issued June 9, 2015	1007

Petitioner also relies on the declaration of C. Arthur MacCarley, Ph.D., P.E. (Ex. 1003)[3] in support of its arguments, and Patent Owner relies

[3] Patent Owner argues that Dr. MacCarley's testimony should be given little weight due to a purported bias and conflict of interest concerning Tesla. PO Resp. 56–57; PO Sur-reply 28. We have considered Patent Owner's arguments, and decline to discount Dr. MacCarley's testimony due to the purported bias and conflict of interest. We give Dr. MacCarley's testimony the weight it is due, evaluating each of his assertions on their own, in light of the explanation offered and the other evidence of record.

on the declaration of Dr. Kirk W. Cameron (Ex. 2012) in support of its arguments. The parties also rely on other exhibits as discussed below.

F. Asserted Grounds of Unpatentability

Petitioner asserts that the challenged claims are unpatentable on the following grounds:

Claim(s) Challenged	35 U.S.C. §[4]	Reference(s)/Basis
1–20	103(a)	Wang
2, 12–14, 20	103(a)	Wang, AESO Report
1, 3, 11, 15, 18	102(e)	Cooley

II. ANALYSIS

A. Principles of Law

Petitioner bears the burden of persuasion to prove unpatentability of the claims challenged in the Petition, and that burden never shifts to Patent Owner. *Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). To prevail, Petitioner must establish by a preponderance of the evidence that the challenged claims are unpatentable. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d).

> An IPR is an expedited administrative procedure, driven by the invalidity theories presented in a petition. As the Supreme Court has explained, "the petitioner's petition . . . is supposed to guide the life of the litigation [in an IPR proceeding]." *SAS Inst., Inc. v. Iancu*, —— U.S. ——, 138 S. Ct. 1348, 1356, 200 L.Ed.2d 695 (2018). By creating the IPR procedure, "Congress chose to structure a process in which it's

[4] The application that issued as the '243 patent was filed before the effective date of the Leahy Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) ("AIA"), and we apply the pre-AIA versions of 35 U.S.C. §§ 102 and 103. *See* Ex. 1001, code (22); *see also* Pet. 3 (asserting that "[t]he pre-AIA statutory provisions . . . apply").

> the petitioner . . . who gets to define the contours of the proceeding." *Id.* at 1355. An IPR proceeds "in accordance with or in conformance to the petition," *id.* at 1356 (internal quotation marks, modification, and citation omitted), and "the petitioner's contentions . . . define the scope of the litigation all the way from institution through to conclusion," *id.* at 1357.

Axonics, Inc. v. Medtronic, Inc., 75 F.4th 1374, 1380 (Fed. Cir. 2023) (alterations in original); *see also Henny Penny Corp. v. Frymaster LLC*, 938 F.3d 1324, 1330 (Fed. Cir. 2019) ("Because of the expedited nature of IPR proceedings, it is of the utmost importance that petitioners in the IPR proceedings adhere to the requirement that the initial petition identify with particularity the evidence that supports the grounds for the challenge to each claim." (internal quotations and brackets omitted)).

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros., Inc. v. Union Oil Co. of Cal.*, 814 F.2d 628, 631 (Fed. Cir. 1987); *see also Finisar Corp. v. DirecTV Group, Inc.*, 523 F.3d 1323, 1334 (Fed. Cir. 2008) (to anticipate a patent claim under 35 U.S.C. § 102, "a single prior art reference must expressly or inherently disclose each claim limitation"). Moreover, "[b]ecause the hallmark of anticipation is prior invention, the prior art reference—in order to anticipate under 35 U.S.C. § 102—must not only disclose all elements of the claim within the four corners of the document, but must also disclose those elements 'arranged as in the claim.'" *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1369 (Fed. Cir. 2008) (quoting *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548 (Fed. Cir. 1983)). Whether a reference anticipates is assessed from the perspective of one of ordinary skill in the art. *See Dayco Prods., Inc. v. Total Containment, Inc.*, 329 F.3d 1358, 1368–69

(Fed. Cir. 2003) ("'[T]he dispositive question regarding anticipation [i]s whether *one skilled in the art* would reasonably understand or infer from the [prior art reference's] teaching' that every claim element was disclosed in that single reference." (second and third alterations in original) (quoting *In re Baxter Travenol Labs.*, 952 F.2d 388, 390 (Fed. Cir. 1991))).

Additionally, "[u]nder the principles of inherency, if the prior art necessarily functions in accordance with, or includes, the claimed limitations, it anticipates." *MEHL/Biophile Int'l Corp. v. Milgraum*, 192 F.3d 1362, 1365 (Fed. Cir. 1999); *see In re Cruciferous Sprout Litig.*, 301 F.3d 1343, 1349–50 (Fed. Cir. 2002). When a reference is silent about an asserted inherent characteristic, it must be "clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill." *Continental Can Co. v. Monsanto Co.*, 948 F.2d 1264, 1268 (Fed. Cir. 1991) (citations omitted). "Inherency . . . may not be established by probabilities or possibilities." *In re Oelrich*, 666 F.2d 578, 581 (CCPA 1981), *quoted with approval in MEHL/Biophile Int'l Corp.*, 192 F.3d at 1365 and *Continental Can Co.*, 948 F.2d at 1268.

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art;

(3) the level of skill in the art; and (4) if present, any objective evidence of obviousness or non-obviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

B. The Level of Ordinary Skill in the Art

In determining the level of ordinary skill in the art, various factors may be considered, including the "type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field." *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (quoting *Custom Accessories, Inc. v. Jeffrey–Allan Indus., Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986)).

Petitioner contends:

> A person having ordinary skill in the art ("POSA") as of the Priority Date would have held a bachelor's degree in electrical engineering, computer science, or a related degree and would have also had at least two years training or experience with intelligent power-management techniques for electrical or electronic devices that use or control utility grid electricity. Ex-1003 ¶¶17–21. Additional advanced educational degrees could substitute for some years of experience, and vice versa. *Id.*

Pet. 11.

Patent Owner contends that:

> a person of ordinary skill in the art ("POSITA") would have had a bachelor's degree in electrical engineering, computer science, or a related degree, along with at least two years of professional experience working on techniques for managing the power consumption of electrical or electronic devices connected to a power grid, with additional education

> substituting for professional experience and vice versa. (EX2012, ¶31.)

PO Resp. 9.

The parties do not disagree on the level of education or the number of years of work experience required. The dispute relates to the precise nature of professional experience. *See* PO Resp. 9. Patent Owner asserts "[t]he Board should adopt PO's proposed definition because it is consistent with the stated field of the invention of the '243 Patent to adapt power consumption of a computational device in response to environmental conditions, (Ex-1001 at 1:6–9), whereas Petitioner's definition introduces terms such 'intelligent' and concepts such as 'control [of] utility grid electricity' that are unnecessary and unclear." *Id.* (alterations in original). Patent Owner, however, does not, at least in this "Level of Skill" section of the Response, explain how, if at all, the differences between the parties' proposals are relevant to any issue in this case. *See id.*

The "General Description" in the Specification of the '243 patent states:

> The present invention teaches methods, systems and apparatuses for adapting the power consumption of a computer system to environmental conditions, including local and global demands on a power grid, by monitoring environmental conditions and appropriately adjusting the power demand of the computer system and/or of a physical infrastructure that houses the computer system.

Ex. 1001, 2:54–62. The claims involve a computational device automatically reducing the consumption of power from the grid. *See, e.g.*, *id.* at 11:1–5 (claim 1). Patent Owner, at oral argument, asserted that "the claims here require a pretty sophisticated analysis that analyzes a lot of data that utilizes methods of machine learning, and so this is why we believe that

the claims require a decision engine to perform those elements." Tr. 48:17–20. In light of this, we fail to understand the basis for Patent Owner's objection to the characterization of the level of ordinary skill involving experience with "intelligent" techniques or devices that control grid electricity.

We determine that Petitioner's definition is consistent with the level of ordinary skill reflected in the Specification and the prior art references of record. *See Okajima v. Bourdeau,* 261 F.3d 1350, 1355 (Fed. Cir. 2001) (recognizing that the prior art itself may reflect an appropriate level of skill in the art). We, therefore, apply Petitioner's definition of the person of ordinary skill in the art. We note, however, that were we to adopt Patent Owner's assessment, the outcome of this Decision would be the same.

C. Claim Construction

We apply the same claim construction standard used in district court actions under 35 U.S.C. § 282(b), namely that articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). *See* 37 C.F.R. § 42.100(b). In applying that standard, claim terms generally are given their ordinary and customary meaning as would have been understood by a person of ordinary skill in the art at the time of the invention and in the context of the entire patent disclosure. *Phillips,* 415 F.3d at 1312–13. "In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence." *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17). "[W]hile extrinsic evidence can shed useful light on the relevant art, . . . it is less significant than the intrinsic

record in determining the legally operative meaning of claim language." *Phillips*, 415 F.3d at 1317 (internal quotation marks omitted).

The parties dispute the meaning of the claim term "current." *See* PO Resp. 12–13, 49–50; Pet. Reply 5–8; PO Sur-reply 4–8. Independent claim 1 recites:

> a computational device automatically *reducing a current amount of consumption* of electric power from the power grid system by the computational device if the analyzing determines the high electric power demand indication.

Ex. 1001, 11:1–5 (limitation 1C) (emphasis added). The other challenged independent claims contain similar language. *Id.* at 12:23–27 (limitation 11D), 12:60–64 (limitation 15D), 14:1–5 (limitation 18G).

The Petition does not propose an explicit construction for the term "current." *See*, *e.g.*, Pet. 11–12 (Claim Construction section stating, "Petitioner applied plain and ordinary meanings to all terms and no express constructions are required here."). In mapping the subject limitation to Cooley, the Petition equates the recited "reducing a current amount of consumption" with "postponing or rescheduling computing tasks. *Id.* at 92 (citing Ex. 1003 ¶¶ 240–243).

Patent Owner argues that "Petitioner ignores the term "current" in its analysis and, as a result, relies on power reductions in the cited art that take place in the future." PO Resp. 13 (citing Pet. 11, 34, 92). Patent Owner contends that a reduction of a current amount of consumption means "a reduction in power consumption that takes place in the present as opposed to some future time." *Id.* at 12 (citing Ex. 2012 ¶ 66).

In reply, Petitioner contends argues that "[t]here is no temporal requirement for when the power reduction occurs, instead the complete phrase current amount of consumption specifies what is being reduced, not

when that reduction is made." Pet. Reply 5. According to Petitioner, "the current amount is the 'what' and not the 'when' in this power-saving equation, and if anything refers to the immediate past rather than the immediate future." *Id.* at 6.

Patent Owner (PO Resp. 12, 49–50) points to the Specification's list of "[e]xamples of power reduction actions." Ex. 1001, 8:47–63. Patent Owner asserts that the list includes numerous examples of power reductions that occur in the present and one that takes place in the future—namely, "scheduling nonessential operations at a different time (e.g., nonessential software or hardware upgrades)." Ex. 1001, 8:61–62 (cited at PO Resp. 12, 50). We are persuaded by Patent Owner's contention (PO Resp. 12) that the applicant, by including the term "current" in the claims, intentionally narrowed the claims to power consumption reductions that occur temporally in the present, rather than those that occur in the future. *See* Pet. Reply 6–7 (Petitioner asserting that Patent Owner's position is "inconsistent with the specification's examples," but then arguing that the Specification does not support that position rather than pointing to any purported inconsistencies). Because the independent claims recite the term "current," construing the term in the temporal sense is not, as Petitioner argues, importing into the claims an example from the Specification. *See* Pet. Reply 8.

Petitioner argues that dependent claim 10, which also contains the term "current," encompasses the situation where running of non-essential services occurs in the future. Pet. Reply 5; *see* Ex. 1001, 12:8–12 (claim 10 reciting, "wherein the step of the computational device automatically reducing the current amount of consumption of electric power from the power grid system by the computational device comprises running

nonessential services only when the spot price value of electricity is low."); *but see* Tr. 45:20–22 (Patent Owner arguing: "The way I reconcile Claim 10 with automatically reducing the current amount of power is that you're disabling a non-essential service, if the spot price of electricity is not low."). Petitioner, without pointing to any other claim, asserts that "[t]he claims thus do not exclude—and, in fact, explicitly include—what [Patent Owner] labels 'future' power reductions." Pet. Reply 5 (citing PO Resp. 13). We do not discern any claim language "explicitly includ[ing]" future power reductions, as Petitioner argues. And, even if there is an internal tension because of a temporal aspect of dependent claim 10, that does not justify reading out of the independent claims the temporal meaning of the word "current."

We also are not persuaded by Petitioner's argument that "current" is not temporal because "[t]he adjective *current* modifies *amount of consumption*; it does not modify the automatically reducing so the *current* adjective modifies what is being reduced not when the reduction happens." Pet. Reply 6. Even if "current" modifies "amount," it still defines the temporal amount that is reduced—i.e., the amount at that time, and Petitioner does not explain adequately how an action at some future time reduces a value or an amount in the past (the value of the prior time's "current amount").

Petitioner argues that "the purported distinction between future and present power reduction actions is not a tenable distinction." Pet. Reply 7. According to Petitioner, "even the simplest action takes some non-trivial amount of time to complete," and "[t]hus, after passage of that non-trivial amount of time, the present has become the past and the future has taken shape." *Id.*; *see id.* (offering the hypothetical example of a two-minute

screensaver delay). We understand Petitioner to argue that "current" cannot be temporal because "certain power-reduction operations, such as 'turn[ing] off memory'" are not instantaneous. *Id.* (alteration in original). To the extent that Petitioner argues that "current" cannot have a temporal meaning in computer-related arts because some processing acts may take milliseconds (or even minutes) to be completed, we disagree. Petitioner offers no persuasive argument or evidence that a person of ordinary skill in the art would have this understanding. For purposes of evaluating Petitioner's contentions regarding the prior art's purported disclosure of a "current" reduction, we need not determine the precise temporal boundaries of the term (e.g., whether an act that occurs over an amount of time slightly longer than instantaneously or as long as two minutes of screensaver wait time is still considered to be reducing the "current" consumption).

Neither party directs our attention to any pertinent evidence in the prosecution history. *Cf.* Ex. 1002, 21–32 (amendment adding, without explanation, the word "current").

We are able to resolve the claim construction issue based on the intrinsic evidence alone, and we need not rely on the parties' extrinsic evidence. *See Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1583 (Fed. Cir. 1996) ("In most situations, an analysis of the intrinsic evidence alone will resolve any ambiguity in a disputed claim term. In such circumstances, it is improper to rely on extrinsic evidence."). However, even considering it, the extrinsic evidence does not affect our ultimate determination. Patent Owner points to a general dictionary, for the definition of "current" as "occurring in or existing at the present time." PO Resp. 12 (citing Ex. 2015, 11 (Merriam-Webster Online Dictionary)).

Patent Owner also relies on the declaration testimony of Dr. Cameron, which repeats Patent Owner's arguments as opinions without further elaboration. *See* Ex. 2012 ¶¶ 66–69 (cited at PO Resp. 11–12). Petitioner cites purported evidence that a screensaver could have a two-minute waiting period and that turning off memory is not instantaneous. *See* Pet. Reply 7 (citing Ex. 1027, Ex. 1025, 326:10–327:10, and "Ex-, 134:6-9").

For purposes of this decision, we apply the plain and ordinary meaning of the term "current," and we agree with Patent Owner that "reducing a current amount of consumption" refers to a reduction in the present, not the future.

On this record and for purposes of this decision, we determine that no other claim terms require express construction.

D. The Asserted Obviousness of Claims 1–20 Over Wang (Ground 1)

Petitioner contends that claims 1–20 of the '243 patent would have been obvious over Wang. *See* Pet. 12–78. Of those, claims 1, 11, 15, and 18 are independent. Patent Owner argues that Petitioner has failed to show that Wang renders obvious the performance of the "analyzing" and "automatically reducing . . . consumption" steps of independent claim 1 and the analogous limitations of independent claims 11, 15, and 18. PO Resp. 13–14, 38, 41–44. For the reasons that follow, we determine that Petitioner has failed to demonstrate adequately that the challenged claims would have been obvious over Wang.

1. Wang (Ex. 1005)

Wang pertains to "methods of energy management," and "[m]ore particularly, . . . pertains to systems and methods to manage power grid peak energy load on the basis of tariff information originating either directly or

indirectly from a utility company or utility related company such as an energy marketer, load distributor, or independent market operator." Ex. 1005, 1:5–9.[5] Wang, under the "Summary of the Invention" heading, states that "[t]he present invention provides energy management and load shedding systems that have comprehensive transmitter coverage and a decentralized receiver architecture that allows customers to make informed choices with regard to energy consumption and load shedding for particular appliances." *Id.* at 10:17–22.

Wang discloses "an inexpensive home dashboard device," that "uses easy to understand symbols to convey information about current power supply and cost," and may "include[] text messaging capabilities to convey such information." *Id.* at 10:23–28. "Energy consumers can use the dashboard to voluntarily modify their energy consumption behavior based on the information provided by the dashboard." *Id.* at 10:28–30. Relatedly, Wang explains that "[c]ertain aspects of the present invention appeal to human psychological factors in order to achieve direct association of energy conservation behavior and energy grid needs." *Id.* at 13:18–20. "For example, in some embodiments, a symbol set for home energy consumption levels as well as energy grid energy status are used," where "[t]he symbol and the rate at which the symbol is flashed on the novel dashboard indicate the immediacy of any need to change energy consumption levels." *Id.* at 13:20–23. "Thus, the inventive system features a datacast utility grid information using lights, symbols and text so that energy consumers have an awareness of power grid load at all times." *Id.* at 13:24–26.

[5] We, like Petitioner, cite to the page numbers of the underlying document rather than the exhibit page numbers.

Wang's Figure 2 is reproduced below.

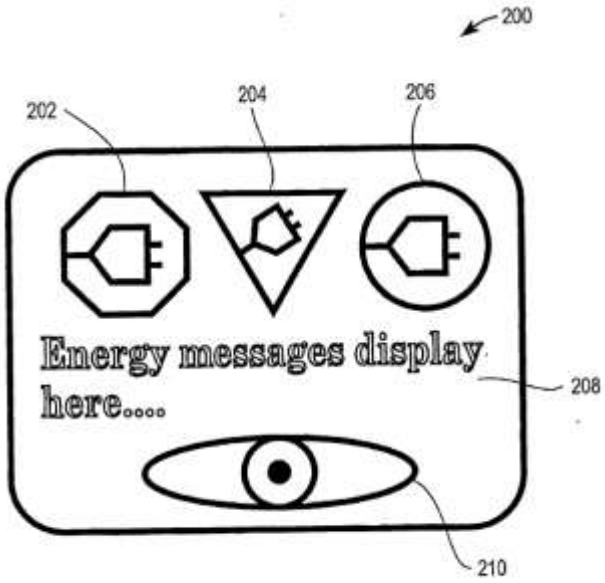


FIG. 2

Figure 2 depicts an exemplary display 200 in accordance with one embodiment of Wang. *Id.* at 22:15–16. "In typical embodiments, display 200 . . . includes a minimal number of symbols (e.g., symbols 202 through 206), an optional text message output 208, and an optional compliance button 210." *Id.* at 22:20–23. "In one embodiment in accordance with Fig. 2, symbol 202 is lit when the power grid is experiencing overloaded conditions." *Id.* at 22:23–24. "[T]he text messages can be used to relay power rate information, details on a particular power emergency (*e.g.*, the degree to which the grid is overloaded), progress in restoring power after a storm or other forms of power outage information, or scheduled power outage information." *Id.* at 23:11–14. In an embodiment, "[d]isplay 200 flashes the appropriate symbol (*e.g.*, symbol 202) and delivers a text message instruction for the consumer customer to follow (e.g., turn off unused lights and push button 210)." *Id.* at 24:11–13.

According to Wang, it also discloses "a system and method for reliably and cost effectively disseminating power tariff information directly from a tariff setting body to . . . microcontrollers embedded in appliances (*e.g.*, household appliances such as dishwashers and dryers)." *Id.* at 41:5–8. "Such appliances, in turn, use this information to regulate appliance usage in a manner [so] as to minimize utility costs subject to any constraints needed to accommodate appliance user life style choices." *Id.* at 41:8–10.

Wang's Figure 5 is reproduced below.

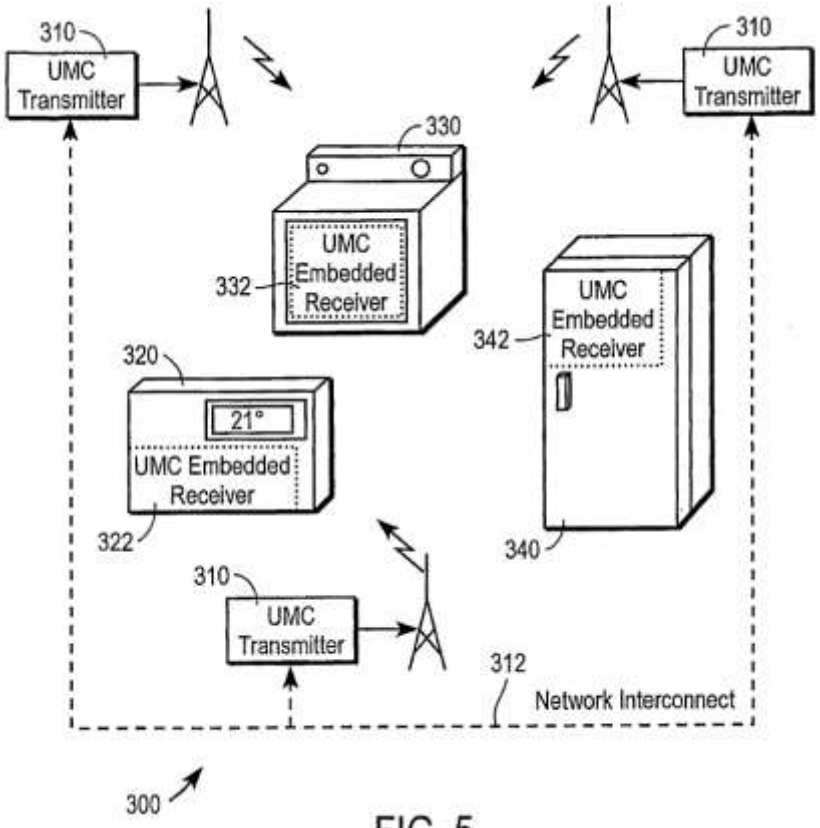


FIG. 5

Figure 5 depicts "a utility message channel (UMC) system 300 for disseminating utility information, at the appliance level, within a geographic region." *Id.* at 41:23–24. "[T]ransmitters 310 . . . wirelessly broadcast tariff information directly to receivers 322, 332, 342 embedded within energy consuming appliances 320, 330, 340, respectively." *Id.* at 41:25–27.

Wang discloses, as one example, an HVAC (Heating, Ventilation, and Air Conditioning) thermostat embodiment where the air conditioning temperature set point is modulated by the tariff rate. *Id.* at 51:10–27. Wang's Figure 10 is reproduced below.

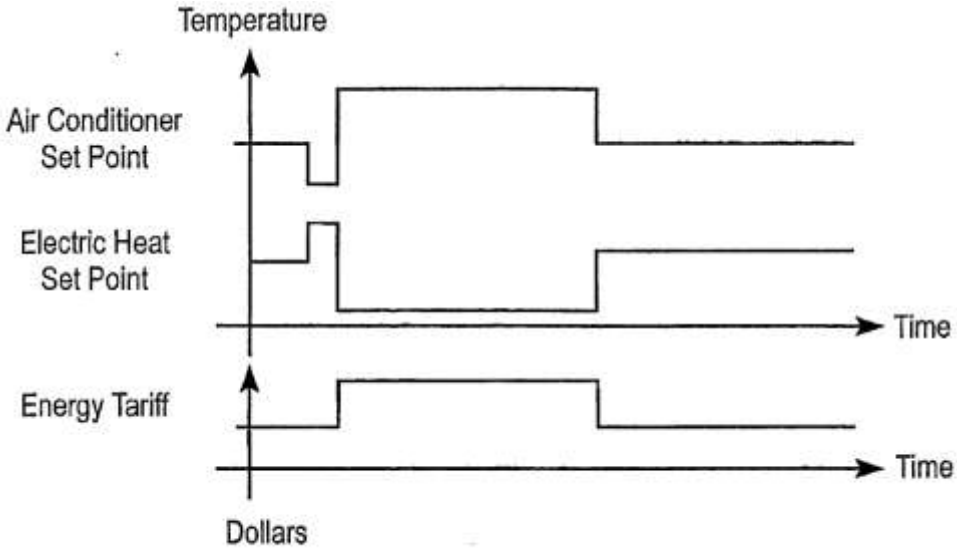


FIG. 10

Figure 10 "illustrates a method of facilitating load shedding using energy tariff information in accordance with an embodiment of [Wang]." *Id.* at 18:16–17. Wang explains that:

> In a preferred embodiment when tariffs are known a priori, during the summer season, the HVAC controller 530 instructs air conditioner 540 to lower the room temperature somewhat below the nominal consumer defined comfort set point for a short period of time just prior to the beginning of the higher power tariffs. In so doing, additional heat is extracted from the house at a lower tariff rate in an effort to extend the time after which the air conditioner must be engaged in order to keep the temperature below the high tariff set point. At the time of higher energy rates the temperature set point is raised slightly higher than the consumer defined comfort level for a period of time equal to the duration of the higher tariff rates.

Id. at 51:19–27.

2. Discussion

A dispositive issue in this case pertains to the "analyzing" step of independent claim 1 and the analogous "analyze" limitations in the other challenged independent claims. *Cf.* Ex. 1001, 10:65–67 (independent method claim 1: "analyzing the operating environmental condition data to determine an indication of a high demand for electric power from the power grid system"); 12:16, 20 (independent claim 11: "providing a computer infrastructure configured to . . . analyze . . ."); 12:49–53, 57 (independent claim 15: "a computer readable tangible storage medium" having "instructions which, when executed on a computer system, cause the computer system to . . . analyze . . . ."); 13:19–31 (independent claim 18: "A programmable device" having a "processing means . . . configured to . . . analyze . . . .").

Generally speaking, the independent claims involve three actions: 1) acquiring data from a feed input, 2) analyzing the data to determine an indication of a high demand for electric power from the power grid, and 3) automatically reducing power consumption if the analyzing determines the high demand indication. *See, e.g.*, Ex. 1001, 10:59–11:5 (independent claim 1). Thus, the analysis has the recited data as an input and has an indicator as an output (in appropriate circumstances), and the automatic reduction in power consumption occurs when the analysis determines that indication. For context and not by way of limitation, the Specification, describing one embodiment, explains that the indication of high demand may be binary—either a "yes" or "no," as if to say, for example, "Yes, the analysis determined that there is an indication of a high demand in the data." *See* Ex. 1001, Fig. 1 (flowchart decision symbol

at 112); *see also id.* at 3:8–20 (describing the figure and referring to "the presence or absence of a high demand indicator within the data feed.").

Wang discloses several distinct and diverse embodiments. *See supra* Section II.D.1; *see also* Ex. 1005, 10–17 (Wang's "Summary of the Invention" section describing multiple embodiments of "the present invention"). Petitioner's contentions that Wang performs "analyzing" to determine an indication of high demand involve the appliance's application processor 416 embodiment and the display 200 embodiment, and further involve indications purportedly "based on" the Alberta Electric System Operator ("AESO") data and tariff data. *See* Pet. 23–29.[6] Specifically, Petitioner contends that "Wang teaches or suggests *analyzing the operating environmental condition data* (e.g., analysis conducted by the application processor 416 and/or the display 200) *to determine an indication of a high demand for electric power from the power grid system* (e.g., based on data from AESO, based on tariff data indicative of high demand). *Id.* at 28–29 (citing Ex. 1003 ¶¶ 76–88); *see also id.* at 29 (Petitioner contending, for the "automatically reducing" limitation 1C, "Wang describes smart appliances with processors and/or displays that receive and analyze operating environmental condition data and then make determinations based

[6] Petitioner, in the Reply, argues that Patent Owner ignores Petitioner's position that Wang expressly discloses data other than tariffs. Pet. Reply 9, 18. We focus here on the contentions *in the Petition* for the analyzing-to-determine-an-indication limitation 1B. And, in any event Petitioner does not explain how different types of data would affect the outcome of this case. *See id.* at 18–20 (asserting that "Wang provides many examples of *operating environmental condition data*, including grid status and reliability and critical weather events," but only discussing the AESO data as a non-tariff example for limitation 1B); *see also* Pet. 15 (listing data types).

thereon."). Petitioner also states that it presents "arguments primarily rely[ing] on a system including Wang's appliance, UMC receiver[7], and display," and refers to this as a "combination[] of Wang's embodiments." Pet. 16 n.4.; *see also* Tr. 18:13–14 (Petitioner's counsel at oral argument: "[W]e put these pieces from Wang together in our combination that used pieces from different areas of the Wang reference.").

"In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable." *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3)); *see id.* ("Thus, it was Harmonic's burden to explain to the Board how Haskell combined with Rossmere rendered the challenged claims unpatentable."). And that showing of particularity must be made in the petition. *See Henny Penny Corp.*, 938 F.3d at 1330.

The theory of the case for limitation 1B ("analyzing the . . . data to determine an indication . . .") set forth in the Petition is unclear. As will be discussed, the Petition does not articulate adequately how Wang discloses, teaches, or suggests either the appliances or display 200 or the combination thereof analyzing input data to determine an indication of high power demand (limitation 1B).

Petitioner breaks up the limitation into two separate actions—1) analyzing the data and 2) "Determin[ing]" an indication of a high demand, jumps back and forth between the appliance embodiment and the display embodiment, alternatively relies on tariff data and AESO data, and

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[7] UMC receiver 400 includes application processor 416. Ex. 1005, 47:15–18, Fig. 7.

merges "analyzing . . . data" with the "automatically reducing" aspect from a different limitation. *See* Pet. 23–29 (alteration in original, transforming "to determine" into determining). We now address each argument in the order presented in the Petition.

a. Appliances and "Data"

The Petition first addresses the phrase "analyzing the operating environmental condition data," and relies on the appliance embodiment. *See id.* at 23–24; *see id.* at 23 (also asserting "display devices" perform the acquiring data step of the previous limitation 1A). Petitioner quotes from Wang's description of certain embodiments, asserting that "[t]hese appliances '[are] configured to use such information in an autonomous manner' and '[are] capable of independent load-shedding decisions.'" *Id.* at 23 (citing Ex. 1005, 15:13–27) (alterations in original). Petitioner contends that:

> Analyzing operating environmental condition data is necessary for autonomous operation and independent load-shedding based on that data. Ex-1003 ¶78. This analysis occurs at an "Appliance/**Load Shed** Application Processor 416 . . . ." Ex-1005, 47:33-48:6. The application processor 416 [of the appliance] analyzes the data for relevant information (e.g., regarding power pricing) and then uses that information "to execute application code specific to the appliance within which [the processor 416] is embedded." *Id.*, 49:16-23.

Id. at 24 (alterations in original).

In so arguing, Petitioner does not explain what the purported analysis involves, and does not allege here that the appliance's processor 416 is analyzing the data to determine an indication of high demand, as recited in claim 1. Rather, this argument jumps over that important "to determine" aspect and seemingly moves to the next limitation, "automatically

reducing . . . consumption" by its reference to "autonomous operation" and "load shed." *See id.* at 23–24. The portion of Wang cited for "analyzing" merely states that "UMC message types are passed to application processor 416 for further processing," that the processor stores time and tariff information in memory, and that the processor executes code. *See* Ex. 1005, 48:3–4, 49:16–23. Neither the Petition nor Dr. MacCarley explains adequately how this passage of Wang relates, if at all, to a teaching of analyzing the data to determine, specifically, an indicator of high demand. *See* Pet. 23–24; Ex. 1003 ¶ 78.

Petitioner's quoted language from Wang regarding autonomous and independent load shedding decisions is taken out of context. Wang states that, "[i]n other embodiments, a decentralized system load sheds appliances in accordance with consumer lifestyle choices," that the appliance can use the information in an autonomous manner in that "[n]o local intercommunication among residential appliances is necessary," and that "each appliance is capable of independent load-shedding decisions when the local area network is not present or otherwise functioning improperly." Ex. 1005, 15:13–27. That an appliance can load shed autonomously and independent of other appliances may be relevant to the subsequent limitation reciting automatically reducing consumption; but, it does not inform our inquiry as to whether the appliance analyzes the data to determine whether there is an indication of high demand or whether the automatic reduction step is performed based on such an indication determined in the analyzing step.

To the extent that the word "necessary" in Petitioner's argument is an inherency contention, it is not persuasive. Pet. 24 ("Analyzing operating

environmental condition data is necessary for autonomous operation and independent load-shedding based on that data."); *see* Pet Reply 17–18 (arguing that "Wang's appliances necessarily analyze the relied-upon tariff data" and citing a case for the proposition that a limitation may be inherently obvious); Tr. 10:13–15 (Petitioner's counsel: "[A]s I had highlighted earlier, there are express teachings related to the tariff data, we also relied on inherency, and we also relied on non-tariff examples."). This "necessary" contention is, at most, an allegation that some analyzing is generally performed, without a specific assertion that analyzing *to determine an indication of high demand* is inherently performed by the identified embodiments of Wang. Dr. MacCarley's cited declaration testimony repeats Petitioner's argument, with the insertion of "in my opinion," and thus also lacks an opinion on any purported inherency of analyzing by Wang's embodiments to determine an indication of high demand for electric power. *See* Ex. 1003 ¶ 78.

b. Display 200 and AESO data

The Petition next turns to the claim phrase that Petitioner quotes as "Determin[ing] an indication of a high demand for electric power from the power grid system." Pet. 25–26 (alteration in original). Petitioner points to Wang's AESO data and reproduces tables listing utility information for the AESO electric grid. Pet. 25–26. Petitioner, without a clear citation to any supporting evidence, argues that "Wang discusses AESO data . . . , which is taught or suggested as being analyzed to make determinations regarding demand for electric power." *Id.* at 25; *see* Pet. Reply 18 (Petitioner arguing that "the Petition . . . established for limitation 1[B] that AESO data was 'taught or suggested as being analyzed to make determinations regarding demand for electric power,' that are then provided to Wang's application

processor to process the data and adjust power consumption accordingly." (citing Pet. 25–26)). According to Petitioner, the difference between certain values "suggests a high demand for electric power" and that "[c]omparing [other] values allows for determining whether a particular generator–and, collectively, the entire grid–is experiencing high demand." Pet. 25–26 (citing Ex. 1003 ¶ 80; Ex. 1005, 36:2–7, 11–20); *see* Pet. Reply 18–19 (asserting that AESO data "could be used to determine" a high demand). These statements by Petitioner amount to a contention that a high power demand *could be* determined from the AESO data.

Wang, in the relied-on section, explains that the utility information "can be communicated using the systems and methods of the present invention to displays 200 so that utility customers can make informed decisions on when to use power." Ex. 1005, 36:13–15. Wang further explains that "[t]ypically, such users would postpone energy consuming tasks to those points in time when more renewable energy resources were being using to generate power." *Id.* at 36:15–17. Thus, the user receives information and the user regulates the consumption of electricity. However, as mentioned, the theory presented in the Petition is that the "analysis [is] conducted by the [appliance's] application processor 416 and/or the display 200." Pet. 28–29; *see* Tr. 17:25–4 (Petitioner's counsel reiterating the theory that the analyzing is performed by application processor 416 "and/or" display 200).

c. HVAC Thermostat and Tariffs

The Petition—immediately after discussing the AESO data—pivots to an appliance embodiment. Pet. 26. Petitioner argues that "Wang's application processor 416 processes such data and adjusts appliance power consumption accordingly," and points to an HVAC thermostat embodiment

that receives tariff data. Pet. 26 (citing Ex. 1005, 47:33–48:6, 51:10–55:6); *see also* Ex. 1003 ¶ 80 (Dr. MacCarley repeating this argument); *see also* Pet. Reply 18–20 (Petitioner arguing that the Petition, at pages 25–26, established certain things regarding the AESO data and Wang's application processor). To the extent that "such data" refers to AESO data, Petitioner does not explain persuasively how or where Wang discloses that the AESO data is processed by the appliance, and does not explain at all how any such alleged processing by an appliance's processor involves determining an indication of high power demand from the analysis of the AESO data.

Petitioner argues that when there is an increase in power pricing (tariffs), an application processor 416 in the HVAC system automatically adjusts temperature set points. Pet. 26–27 (citing Ex. 1005, 51:11–52:20). This is a contention that, when a pricing increase exists, the processor automatically adjusts consumption—an allegation that does not respond to limitation 1B and seems better suited for limitation 1C ("a computational device automatically reducing a current amount of consumption of electric power"). Petitioner does not allege that the HVAC system recognizes that the price has increased (as opposed to simply receiving a raw price value) and does not allege explicitly that the HVAC system analyzes data to determine an indication of high demand as required by limitation 1B.

Petitioner next argues that:

> Given that tariffs function to discourage energy use during periods of high demand, a POSA would have understood the power pricing increase as indicative of a *high demand for electric power from the power grid system*. Ex-1003 ¶84. Further, a POSA would have understood the set-point adjustments as requiring or at least strongly suggesting a

> *determin[ation] [of] an indication of a high demand for electric power*.

Id. at 27; *cf.* Pet. Reply 10 (Petitioner asserting that, "[a]fter a user makes threshold settings [regarding tariff rates and corresponding temperature set points], the system in Wang, not the user, performs automatic load-shedding decisions based on those settings autonomously, including for load-shedding decisions."). Even if correct, this amounts to a contention that it would have been obvious for someone or something to have determined that a tariff increase is an indication of high demand and then cause set-point adjustments. *See* Tr. 23:1–3 and 26:19–21 (Petitioner's counsel at oral argument seemingly asserting that the claims' recited "indication" is a person's knowledge of the relationship between tariffs and high demand). Petitioner, however, does not show that the HVAC's processor performs such a determination.

The relied-on section of Wang pertains to "when tariffs are known a priori," and explains that, prior to the onset of higher tariff rates in the summer, the HVAC controller increases power consumption by lowering the temperature to cool the house during a low-rate period, then, "[a]t the time of higher energy rates," the temperature set point is raised to a slightly uncomfortable level during the "a priori" known period of a higher tariff rate. Ex. 1005, 51:17–27; *see id.* at 51:28–52:5 (similar explanation for heating the house during the winter months). This suggests that the HVAC controller merely receives a tariff value (known in advance) or simply a date and time, and then adjusts the temperature set point. *See* Ex. 1025, 339:19–343:11 (Dr. Cameron opining that the thermostat simply reacts to a current value versus a set point established by a user). Petitioner does not explain adequately or persuasively how this section of Wang discloses or teaches the

HVAC processor itself analyzing a data feed to determine whether there is an indication of high demand.

d. Clothes Dryer

Immediately after discussing the HVAC embodiment, Petitioner shifts to Wang's discussion of a clothes dryer embodiment, and argues that:

> Relatedly, "the appliance may employ a random back-off algorithm to delay [its] activation . . . **following the cessation of [an] on-peak event**." Ex-1005, 55:3–6. In determining cessation of the on-peak event, Wang's devices analyze operating environmental condition data to make determinations regarding demand for electric power. Ex-1003 ¶85. These teachings further underscore the obviousness of such a technique.

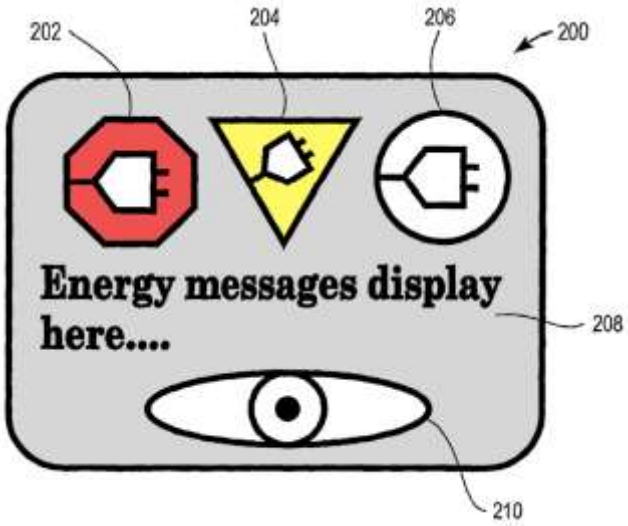
Pet. 27. Dr. MacCarley's testimony mostly repeats Petitioner's argument, with the additional assertion that "Wang makes clear" that its devices analyze data to make determinations regarding demand for electric power.

We disagree with the argument that Wang makes clear that its devices determine the end of an on-peak event or make determinations regarding demand for power. Petitioner's quote is taken out of context. Wang explains that the utility company is concerned with "power demand spikes that result from synchronized demand during utility-imposed load shedding"—demand spikes that occur when many consumers, at the same time, increase power consumption after the end of a utility-imposed reduction. Ex. 1005, 54:32–55:6. Wang further explains that "pricing can be slowly ramped down over a 'shoulder period' after a peak event to allow consumer loads with individual set points to come on at their level of cost/comfort preference," and that "the appliance may employ a random back-off algorithm to delay the activation of an appliance for a random period of time following the cessation of a[n] on-peak event." *Id.* Thus, we

find that Wang teaches that it is the utility company, not the appliance, that makes any assessments regarding demand and peak events, and sends a price to the appliance, which then controls its individual power consumption based on an algorithm.

e. Display 200

The Petition then turns back to the display embodiment. Reproduced below is Petitioner's version of Wang's Figure 2.



Pet. 28. Above is Wang's Figure 2—a depiction of an exemplary display 200 in accordance with one embodiment of Wang—with Petitioner's coloring added. *Id.* at 22:15–16.

Petitioner asserts that:

> As for the display device (gray), the display 200 illuminates symbol 202 (red) "when the power grid is **experiencing overloaded conditions**." *Id.*, 22:22–26. "[The] symbol 202," Wang explains, "[can] flash with an intensity . . . [indicative] of the extent to which the power grid is overloaded." *Id.*, 22:26–27. Additionally, the display 200 can light up symbol 204 (yellow) "in cases where the power grid is

> not yet overloaded but is **in danger of becoming overloaded**." *Id.*, 22:28–29.

Pet. 28 (alterations in original). Petitioner follows this with a statement equating "analyzing the operating environmental condition data" with "analysis conducted by . . . the display 200." *Id.* at 28–29 (citing Ex. 1003 ¶¶ 77–88). The Petition does not explain adequately or persuasively how Wang teaches or suggests display 200 conducting an analysis of the acquired data. *See id.*

Dr. MacCarley goes further, however, opining that, "[t]hough Wang does not explicitly describe the display 200 *analyzing the operating environmental condition data to determine an indication of a high demand for electric power*, I believe a POSA would have understood such analysis as a prerequisite to the display providing the aforenoted grid-status indications via symbols 202 and 204." Ex. 1003 ¶ 87; *see also id.* 88 (Dr. MacCarley repeating Petitioner's argument that "Wang teaches or suggests analyzing the operating environmental condition data (e.g., analysis conducted by . . . the display 200)"). This is a conclusory opinion that an analysis—by the display—to determine an indication of high demand is inherent in the display's illumination of grid-status indications. Inherency requires that the characteristic upon which the reference is silent be necessarily present in the thing described in the reference. *See Continental Can Co.*, 948 F.2d at 1268. Dr. MacCarley does not explain adequately the basis for his belief that the claimed analysis is a prerequisite to the display providing indications via symbols 202 and 204. *See* Ex. 1003 ¶¶ 86–88. "Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight. 37 C.F.R. § 42.65(a); *see also Rohm & Haas Co. v. Brotech Corp.*, 127 F.3d 1089, 1092 (Fed. Cir. 1997) (nothing in the

Federal Rules of Evidence or Federal Circuit jurisprudence requires the fact finder to credit unsupported assertions of an expert witness).

For the following reasons, we find that, in Wang, an analysis of data to determine an indication of high demand is not necessarily "a prerequisite to the display providing the aforenoted grid-status indications via symbols 202 and 204," as Dr. MacCarley opines, and therefore is not inherently described in Wang.

Wang explains that the display has a radio receiver and that the utility provider transmits information to the display in order to encourage the consumer customer to manually reduce power consumption. *See* Ex. 1005, 22:14–25:3; *see id.* at 22:20–24 ("In typical embodiments, display 200 is a battery operated RDS or subsidiary communications authorization (SCA) radio receiver that includes a minimal number of symbols (e.g., symbols 202 through 206), an optional text message output 208, and an optional compliance button 210."). According to Wang, "[e]nergy consumers can use the dashboard to voluntarily modify their energy consumption behavior based on the information provided by the dashboard," and "datacasting is conveyed from utility companies or energy distributors." *Id.* at 10:28–33.

It is the utility company that causes the display to illuminate symbols. Wang states, for example:

> In another embodiment, button 210 is used as a demand response receiver. In such embodiments, when a utility wishes [to] provide for demand response (DR) energy reductions based on a DR from their consumer customers, such customers are signaled via UMC datacast to display 200. Display 200 flashes the appropriate symbol (e.g., symbol 202 [signaling that the grid is experiencing overload conditions]) and delivers a text message instruction for the consumer customer to follow (e.g., turn off unused lights and push button 210). When the

> customer sees light 202 and responds by pushbutton 210 and turning off lights, then the consumer is prompted to identify how much power they turned off (e.g., 100, 200 watts).

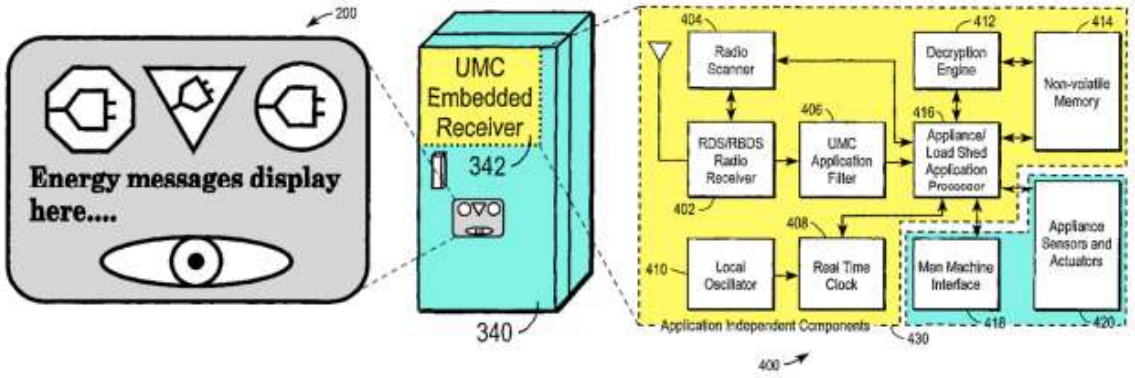
Id. at 24:8–16. Thus, Wang teaches that the display simply displays information provided by the utility company. *See* Ex. 2012 ¶¶ 104–112 (Dr. Cameron discussing Wang's disclosures and credibly opining that "a POSITA reading Wang would conclude that the display is ***not*** performing such an analysis."). Neither Petitioner nor Dr. MacCarley has shown persuasively that Wang teaches that the display analyzes input data to determine an indicator of high power usage on the grid and then, based on such an analysis by the display, illuminates a light or symbol, as argued.

f. A Combination of Embodiments

The Petition appears to assert that Wang discloses a smart appliance having both a display 200 and a UMC receiver 400, which includes application processor 416. For example, in the context of the "acquiring . . . data" limitation 1A, the Petition contains a colorized depiction of a refrigerator having both components and asserts, above the depiction, that "Wang describes receipt of operating environmental condition data by smart appliances . . . with embedded UMC receivers . . . and/or integrated display devices . . . ." Pet. 16 (citing Ex. 1005, 14:29–32, 22:15–16, 47:13–15); *but see id.* at 16 n.4 (The Petition referring to "a system including Wang's appliance, UMC receiver, and display" as a "combination[] of Wang's embodiments."). In the Reply, Petitioner argues—over the same depiction—that "the Petition relied on each of Wang's *smart appliances as a respective whole (including the display 200 and an embedded UMC receiver)* as the computational device in the claims." Pet. Reply 16 (citing Pet. 16–33) (Petitioner's emphasis omitted and ours added). Thus, we

understand Petitioner to assert that Wang discloses a smart appliance having display 200 in addition to application processor 416 (within the UMC receiver).

Petitioner's depiction of this combination is reproduced below.



Ex-1005, Figs. 2, 5, and 7 (annotated demonstrative).

Pet. 16. Above is Petitioner's demonstrative depiction including display 200 of Figure 2, a refrigerator (energy consuming appliance 340) excerpted from Figure 5, and UMC receiver system 400, including application processor 416, of Figure 7. *See* Ex. 1005, 41:27 (identifying element 340).

This combination is not disclosed in Wang. Petitioner's depiction includes modified versions of Wang's figures. For example, the refrigerator in Wang's Figure 5 does *not* depict a display. Dr. MacCarley explains the changes made to the figures in order to arrive at this proposed combination:

> These excerpts are placed next to each other, annotated, and color-coded to indicate that the display 200 (Figure 2) can be integrated into an appliance such as the refrigerator 340 (Figure 5), and that the UMC receiver system 400 (Figure 7) can likewise be embedded into the refrigerator. To further illustrate this, a small depiction of the display 200 is overlaid onto the refrigerator 340. Also, the man machine interface 418 and appliance sensors and actuators 420 are outlined in

> turquoise to suggest that they are part of the refrigerator 340, which is also colored in turquoise.

Ex. 1003 ¶ 61. Thus, the proposed combination was created by Petitioner or Dr. MacCarley, and the mixing of embodiments is neither disclosed nor supported by Wang, as explained more fully below.

The Petition asserts that "a display 200 . . . can be integrated into (or at least mounted on) a smart appliance" and—after acknowledging that display 200 communicates data to a *user* by illuminating symbols and displaying messages—asserts that "[a]dditionally, the display device 200 can use the information to regulate the power consumption of a smart appliance." Pet. 18–19 (citing Ex. 1005, 14:29–32); *see* Ex. 1003 ¶ 65 (Dr. MacCarley opining that, "[a]s for the display, Wang also explains that a display 200 . . . can be integrated into a smart appliance and configured to receive information via radio waves. (citing Ex. 1005, 14:29–32, 23:20–21 (stating that display 200 receives information by radio waves)).

When read in context, however, the cited portion of Wang does not support the assertion that Wang discloses display 200 integrated into smart appliances. The cited page 14 is in Wang's "Summary of Invention" section, where Wang summarizes several embodiments that Wang later discusses in more detail under separate headings. *See* Ex. 1005, 10:17–17:20 (Section 3, "Summary of Invention"); *see, e.g.*, *id.* at 22:14–25:3 (Section 5.2, "Exemplary device" discussing display 200); *id.* at 41:4–51:9 (Section 5.14, "Appliance load shedding/balancing using broadcast tariff data" discussing appliances having UMC receiver 400 and application processor 416). Wang explains that a problem was that consumers were not incentivized to manage electricity use, and there was a need to inform customers of current power rates. *Id.* at 14:22–28. To address these issues,

Wang states that "[t]he inventive device can be integrated into major appliance in the home and used as a basis for regulating the times when such devices operate, how frequently they operate, and how much power they consume when they operate." *Id.* at 14:29–32. Wang then describes the display 200 embodiment. *See id.* at 14:32–15:2. In this portion relied on by Petitioner, Wang does not use the term "smart appliances," but, rather, is discussing integrating the display into major appliances so that the consumer may take action regarding power consumption. *See id.* at 14:19–32; *see also id.* at 35:7–17 (Discussing the display embodiment and stating that "[t]he present invention addresses the challenge of how to get such information in front of people and their appliances, where and when it matters most," and that "the human operator is still 'in the loop.'"). It is Dr. MacCarley that uses that "smart appliance" label, stating:

> [A] system including an appliance (e.g., refrigerator 340 of Figure 5)), a UMC receiver (e.g., UMC receiver system 400 of Figure 7), and a display device (e.g., display 200 of Figure 2). I refer to this system as a "smart appliance."

Ex. 1003 ¶ 60. As such, it again is Dr. MacCarley that is creating a mix of embodiments, not Wang. It is after Wang's relied-on discussion of integrating a display in major appliances that Wang transitions to a discussion of other embodiments that involve "a household appliance or other electrical apparatus compris[ing] a transceiver and a microprocessor." *See id.* at 23–34.

At oral argument, Petitioner asserted that it presented an obviousness theory based on the combined system of Wang using both a display and smart appliances. *See, e.g.*, Tr. 14:14–22 (responding to a question asking Petitioner to clarify what it contends is purportedly performing the analyzing step); *id.* at 13:14–16 ("the petition we talked about a motivation to combine

embodiments, because we were combining embodiments."). As discussed above, the Petition discusses the combination as if it is disclosed in Wang, rather than being obvious. In the motivation section of the Petition, Petitioner argues that, "[w]hile certain figures and descriptions in Wang refer to different embodiments, these embodiments are disclosed in adjacent figures, and Wang itself indicates that '[m]any modifications and variations in this invention can be made without departing from its spirit and scope.'" Pet. 77 (citing Ex. 1005, 63:3–7; *Boston Scientific Scimed, Inc. v. Cordis Corp.*, 554 F.3d 982, 991 (Fed. Cir. 2009)) (second alteration in original). Petitioner further argues that:

> Given the interchangeable nature taught for various features of Wang's embodiments, it would have been a routine and obvious matter for a POSA to combine aspects from Wang's various embodiments (e.g., data acquisition, internal hardware, data analysis performed by the UMC receiver 400 and/or the display 200). Moreover, many of Wang's embodiments–particularly of specific smart appliance types–include common components, thus further confirming combinability of aspects of the disclosed embodiments. A POSA would have had a reasonable expectation of success in combining features of the embodiments together.

Id. at 77–78 (citing Ex. 1003 ¶¶ 201–203).

We determine that these reasons are inadequate and too generic to satisfy Petitioner's burden as they lack a clear explanation of what and how "aspects from Wang's various embodiments" are proposed to be combined along with reasoning specific to that proposal. Petitioner, for example, does not explain adequately or persuasively why a person of ordinary skill in the art would have added a display that purportedly receives and analyzes data to a "smart appliance," when that appliance already has an application processor that purportedly receives and analyzes the same data. It is not

enough for Petitioner to allege that all of the elements of the challenged claims can be found somewhere in the various embodiments of Wang; Petitioner must also show that a person of ordinary skill in the art would have had a reason to combine the elements in the manner as arranged in the challenged claims. *See KSR Int'l Co.*, 550 U.S. at 418 ("[A] patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. Although common sense directs one to look with care at a patent application that claims as innovation the combination of two known devices according to their established functions, it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does."). We find Petitioner has not shown an adequate reason to combine embodiments.

Additionally, even for the alleged combination of embodiments, Petitioner, for the reasons discussed above, has not shown that application processor 416 or display 200, individually or in combination, analyzes the operating environmental condition data to determine an indication of a high demand for electric power, as recited in the challenged independent claims. *See* Pet. 28–29 (Petitioner mapping those components to the "analyzing" step of limitation 1B); *see also* Pet. Reply 17 (Petitioner arguing that "the display 200, as one component of Wang's smart appliance, can display a high demand indicator; while another component—the embedded UMC receiver with an appliance/load-shed processor—can perform the automatically reducing operation for the overall computational device," but

not identifying a component that analyzes the acquired data to determine an indication of high demand prior to illuminating a symbol on the display.).

In the Reply, Petitioner argues that, "even if the claims require completely autonomous behavior (they do not), Wang's repeated, express teachings related to autonomous operations suffice as at least some embodiments in Wang would be completely autonomous or it would have been an obvious change to automate any manual operations." Pet. Reply 12 (citing *Palo Alto Networks v. Centripetal Networks*, IPR2021-01148, Paper 40, 34 (PTAB 2023)). Petitioner does not explain with any specificity what aspect of Wang it proposes to automate, and the conclusory assertion that doing so would be obvious lacks adequate or persuasive reasoning.

g. Conclusion

Petitioner has not met its burden at least regarding the limitation of independent claim 1 reciting, "analyzing the operating environmental condition data to determine an indication of a high demand for electric power from the power grid system." The contentions in the Petition are the same or similar for the analogous "analyze" limitations of independent claims 11, 15, and 18. *See* Pet. 68 (contentions for limitation 11C), 73 (contentions for limitation 15C), 76 (contentions for limitation 18F).

Accordingly, after having considered the parties' arguments and evidence, we determine that Petitioner has *not* shown by a preponderance of the evidence that the subject matter of the independent claims or of their respective dependent claims would have been obvious over Wang.

E. The Asserted Obviousness of Claims 2, 12–14, and 20 Over Wang and AESO Report (Ground 2)

Petitioner contends that dependent claims 2, 12–14, and 20 would have been obvious over Wang and the AESO Report. *See* Pet. 78–82.

Petitioner relies on the AESO Report for data in addition to that disclosed in Wang. *See, e.g.*, Pet. 78 ("A POSA would have found it obvious to make use of all data from AESO."). Petitioner does not rely on the AESO Report in any persuasive manner that cures the underlying defect in the articulation of the challenge to the independent claims as allegedly obvious over Wang alone. Thus, for the same reasons discussed above, Petitioner has not shown by a preponderance of the evidence that dependent claims 2, 12–14, and 20 would have been obvious over Wang and the AESO Report.

F. The Asserted Anticipation of Claims 1, 3, 11, 15 and 18 by Cooley (Ground 3)

Petitioner contends that claims 1, 3, 11, 15, and 18 are anticipated by Cooley. *See* Pet. 83–92 (addressing claim 1). Patent Owner argues that Petitioner has failed to demonstrate that Cooley discloses "reducing a *current* amount of consumption of electric power." *See, e.g.*, PO Resp. 49 (emphasis added).

1. Cooley (Ex. 1007)

Cooley is titled "System and Method for Determining Whether to Reschedule Malware Scans Based on Power-Availability Information for a Power Grid and Power-Usage Information for the Scans." Ex. 1007, code (54). According to Cooley, "[c]omputing devices often execute various tasks, such as automatic disk defragmentation and anti-virus scans, on regularly scheduled bases," which, when many devices do so simultaneous, may result in usage spikes on a power grid. *Id.* at 1:10–16. Cooley discloses that:

> A computer-implemented method for determining whether to reschedule tasks on computing devices based on power-availability information for a power grid may comprise: 1) identifying at least one task scheduled to execute on a

> computing device, 2) receiving power-availability information for the power grid, and then 3) determining, based on the power availability information, whether to reschedule the task.

Id., code (57) (Abstr.)

2. Discussion

Independent claim 1 recites, in pertinent part, "a computational device automatically *reducing a current amount of consumption* of electric power . . . by the computational device. Ex. 1001, 11:1–5 (limitation 1C) (emphasis added). The other challenged independent claims contain similar language. *Id.* at 12:23–27 (limitation 11D), 12:60–64 (limitation 15D), 14:1–5 (limitation 18G).

For this limitation, the Petition—before the summary sentence at the end of the section—quotes from various portions of Cooley, inserting bolding occasionally but without presenting any explicit argument as to the purported import of the quoted material. *See* Pet. 90–92. The Petition then summarizes Petitioner's contention as:

> Thus, Cooley discloses *a computational device* (e.g., a computing device comprising a CPU, such as a laptop or desktop computer, a PDA, digital camera, multimedia player, or an embedded system) *automatically reducing a current amount of consumption of electric power from the power grid system by the computational device if the analyzing determines the high electric power demand indication* (e.g., postponing or rescheduling computing tasks).

Id. at 92 (citing Ex. 1003 ¶¶ 240–243).

As discussed above, Patent Owner contends that the claim phrase "reducing a *current* amount of consumption" refers to a power consumption reduction that takes place in the present. *See supra* Section II.C; *see also* PO Resp. 12. Patent Owner argues that Petitioner relies on future activities and fails to demonstrate how Cooley discloses reducing a *current* amount of

consumption. *See* PO Resp. 13. Specifically, Patent Owner asserts that "Petitioner relies on scheduling for this limitation, which does not affect the current amount of consumption of electric power." *Id.* at 51. According to Patent Owner, "Cooley's task permits that are rescheduled or postponed is directed to future tasks that are in the system's regular schedule. *Id.* at 51–52 (citing Ex. 2012 ¶ 194).

In its Reply, Petitioner does not disagree with Patent Owner's characterizations of Petitioner's contentions or Cooley's disclosures. *See* Pet. Reply 8. Rather, Petitioner disagrees with Patent Owner's claim construction position, arguing that the claims do not contain a temporal requirement and, thus, do not exclude future power reductions. *See, e.g., id.* at 5 ("The claims thus do not exclude—and, in fact, explicitly include—what PO labels 'future' power reductions."); *id.* at 8 ("With [Patent Owner's construction of *current*] rejected . . . PO has nothing else to say against Cooley's anticipation of claims 1, 3, 11, 15, and 18.").

For the reasons discussed above, we agree with Patent Owner's proposed construction. *See supra* Section II.C. Petitioner, in focusing on future power usage actions, has not shown that Cooley discloses "reducing a current amount of consumption," as recited in independent claim 1. The contentions in the Petition are the same or similar for the analogous "reduce a current amount of consumption" limitations of independent claims 11, 15, and 18. *See* Pet. 96–97 (contentions for limitation 11D), 98 (contentions for limitation 15D), 101 (contentions for limitation 18G). Claim 3 depends directly from independent claim 1, and thus also contains the "reducing a current amount of consumption" limitation.

Accordingly, after having considered the parties' arguments and evidence, we determine that Petitioner has *not* shown by a preponderance of the evidence that Cooley anticipates claims 1, 3, 11, 15, and 18.

III. PATENT OWNER'S MOTION TO EXCLUDE

Patent Owner moves to exclude the following documents:

- Exhibit 1006 (Archived Copies of Published Data from the Alberta Electric Supply Operator ("AESO Report"));
- Exhibit 1012 (Alberta Electrical Supply System Study);
- Exhibit 1013 (Alberta Electric Supply Operator – Help Page);
- Exhibit 1014 (RSS Article);
- Exhibit 1015 (History of Power Article);
- Exhibit 1016 (U.S. Patent No. 5,673,497 to St. Louis);
- Exhibit 1017 (Alliance Laundry Systems – Home Laundry Dryers Service Manual);
- Exhibit 1018 (Internet Archive Affidavit);
- Portions of Exhibit 1025 (Copy of February 11, 2025, Deposition Transcript of Dr. Cameron);
- Exhibit 1027 (Inspiron 1210 Quick Reference Guide);
- Portions of the Petition (Paper 2);
- Portions of Exhibit 1003, Declaration of Dr. C. Arthur MacCarley;
- Portions of Petitioner's Reply (Paper 28).

Paper 35, i (Table of Contents).

A motion to exclude should be directed to evidence. *See, e.g.*, Consolidated Trial Practice Guide[8] at 79 ("A motion to exclude must explain

[8] Available at https://www.uspto.gov/TrialPracticeGuideConsolidated.

why the *evidence* is not admissible." (emphasis added)). Briefs are not evidence. We deny the motion to exclude as to the Petition and Petitioner's Reply.

Because we do not rely in our analysis on the above-listed exhibits in a manner adverse to Patent Owner, we dismiss as moot the motion to exclude as to those exhibits.

IV. PATENT OWNER'S MOTION TO STRIKE

Patent Owner moves to strike the following documents:

- Portions of Exhibit 1014 (RSS e-draft);
- Portions of Exhibit 1025 (Deposition Transcript of Dr. Cameron);
- Exhibit 1027 (Inspiron 1210 Quick Reference Guide);
- Portions of Petitioner's Reply (Paper 28).

Paper 37, i (Table of Contents).

Patent Owner argues that these exhibits and Petitioner's Reply introduce untimely new theories or contain misrepresentations and mischaracterizations. *See id.* at 3–7; *see id.* at 6 (asserting that "the entire claim 5 argument under Ground 1 [in Petitioner's Reply] should be stricken because it misrepresents what arguments were made in the Petition."); *id.* at 6–7 (asserting that two sentences "relating to claim 8 . . . should be stricken as mischaracterizing PO's position and contents of Dr. MacCarley's declaration as 'add[ing] helpful discussions.'" (alteration in original)).

The Patent Trial and Appeal Board's Consolidated Trial Practice Guide addresses motions to strike, stating:

> In most cases, the Board is capable of identifying new issues or belatedly presented evidence when weighing the evidence at the close of trial, and disregarding any new issues or belatedly presented evidence that exceeds the proper scope of reply or

> sur-reply. As such, striking the entirety or a portion of a party's brief is an exceptional remedy that the Board expects will be granted rarely.

Consolidated Trial Practice Guide at 80 (available at https://www.uspto.gov/TrialPracticeGuideConsolidated). In this case, we are capable of identifying belatedly presented arguments, particularly where Patent Owner has raised the objection, and the exceptional remedy is not appropriate. Similarly, we are capable of assessing whether there has been a misrepresentation of arguments or mischaracterization of evidence. We have considered Patent Owner's arguments in the Sur-reply regarding the subject exhibits and the Reply. *See, e.g.*, PO Sur-reply 7 (Patent Owner' discussing Exhibit 1027 and Dr. Cameron's testimony on page 326 of Exhibit 1025)). And, we do not rely in our analysis on these exhibits or the subject portions of the Reply in a manner adverse to Patent Owner.

In light of the above, we deny Patent Owner's motion to strike.

V. THE PARTIES' OBJECTIONS TO DEMONSTRATIVE EXHIBITS

Both parties objected to demonstrative exhibits to be used at the oral argument. Papers 44, 46. Patent Owner objects to certain demonstrative exhibits as purportedly violating the restriction against presenting new evidence or argument at oral argument. *See* Paper 44, 1 (citing Paper 34, 3). Petitioner objects to certain demonstrative exhibits as purportedly mischaracterizing the record or containing impermissible new argument. *See* Paper 46, 2.

We have considered the objections. However, the demonstrative exhibits are not evidence, and, in this Decision, we rely solely on the arguments properly presented in the parties' briefs and the evidence of record, not on the demonstrative exhibits. *Cf.* Tr. 4:10–13 (The Board

stating, at the beginning of the hearing: "We have reviewed and considered your objections and we'll consider them when we're drafting the final written decision[;] we're not going to exclude any slides or anything like that today."). Thus, the objections are overruled.

VI. CONCLUSION

Petitioner has *not* shown by a preponderance of the evidence that claims 1–20 of the '243 patent are unpatentable.

In summary:

Claim(s)	**35 U.S.C. §**	**Reference(s)/Basis**	**Claim(s) Shown Unpatentable**	**Claim(s) Not Shown Unpatentable**
1–20	103(a)	Wang		1–20
2, 12–14, 20	103(a)	Wang, AESO Report		2, 12–14, 20
1, 3, 11, 15, 18	102(e)	Cooley		1, 3, 11, 15, 18
Overall Outcome				1–20

VII. ORDER

For the foregoing reasons, it is

ORDERED that claims 1–20 of the '243 patent have *not* been proven to be unpatentable;

FURTHER ORDERED that Patent Owner's Motion to Exclude is *denied in part* and *dismissed in part*;

FURTHER ORDERED that Patent Owner's Motion to Strike is *denied*;

FURTHER ORDERED that both parties' objections to hearing demonstrative exhibits are *overruled*; and

FURTHER ORDERED that, because this is a Final Written Decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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