

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CANADIAN SOLAR (USA) INC.,
Petitioner,

v.

FIRST SOLAR, INC.
Patent Owner

Patent No. 9,130,074

Title: High-Efficiency Solar Cell Structures and Methods of Manufacture

Inter Partes Review No. IPR2025-01432

**PETITIONER'S OPPOSITION TO PATENT OWNER'S
REQUEST FOR DISCRETIONARY DENIAL**

TABLE OF CONTENTS

	<u>Page</u>
I. Summary of Argument	1
II. Background Facts	2
A. PO Does Not Practice the Challenged Patent	2
B. PO Has No Settled Expectations of the Challenged Patent’s Validity in View of the Yablonovitch and Kwarck References	3
C. CS Has Invested Billions in America.....	4
D. The District Court Litigation.....	6
III. PO Has No Settled Expectations, and The Equities Favor CS.....	7
A. PO Has Never Commercialized the Asserted Technology and Has Not Attempted to Enforce the Patent Until Recently.....	7
B. The Examiner Committed Material Errors in Allowing the Challenged Patent	9
C. CS Invested in and Commercialized the Accused Product Before PO’s Notice of Alleged Infringement	14
D. Challenges to the “Settled Expectation Rule”.....	15
IV. U.S. Treaty Obligations and CS’s Investments in U.S. Manufacturing Weigh Against PO’s Non-Existent National and Economic Security Concerns.....	15
V. The <i>Fintiv</i> Factors Weigh Against Discretionary Denial.....	18
VI. <i>General Plastics</i> Factors Do Not Apply and Favor Institution.....	19

I. Summary of Argument

Petitioner Canadian Solar (USA) Inc. (collectively with real parties in interest, “CS”) respectfully submits that Patent Owner’s (“PO’s”) request for discretionary denial should be rejected. The challenged patent is only a paper patent. PO has never practiced, commercialized, or marked any product with the challenged patent. This negates any settled expectations of by PO. And PO’s misguided attempts to malign CS with misleading claims of deep ties to a foreign adversary fare no better. CS is a Canadian company that has invested billions in America, building separate manufacturing facilities in Texas, Indiana, and Kentucky, which are on track to employ over 4,000 American workers. These substantial investments in American manufacturing directly serve the U.S. national and economic interests. CS has no ties to the Chinese Communist Party or Chinese government. In view of these undisputed facts, PO’s charged rhetoric borders on an implicit request that the Director ignore the non-discrimination prohibition under Article 3 of The Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS).

Turning to the merits, material errors in prosecution overcome any settled expectations as to the challenged patent’s validity. CS’s Petition focuses on the fact that the Examiner made material errors by not considering the Yablonovitch and Kwark prior art references. These references are credited as the origins of the

TOPCon technology at issue, and disclose the key limitations PO argued, and the Examiner identified, as missing in the prior art record. The Board is being presented with the Yablonovitch and Kwarck references for the first time.

From a procedural perspective, the *Fintiv* factors plainly favor institution. There will be little duplication between the IPR and the parallel district court litigation. The District Court's scheduled *Markman* hearing (January 19, 2027) is almost a year *after* the expected institution decision date (February 28, 2026), and trial (March 27, 2028) is more than one year *after* the projected Final Written Decision date (February 28, 2027).

II. Background Facts

A. PO Does Not Practice the Challenged Patent

PO did not develop the patented process; it simply acquired the challenged patent when it purchased the original assignee, Tetrasun, in April 2013. EX1051. It then abandoned the Tetrasun process in 2016 (in favor of a completely different non-silicon cadmium-telluride technology) and never used the Tetrasun process. EX1046, EX1047, EX1048. Eight years later, PO first notified CS of the challenged patent and that it somehow covered TOPCon products. EX1024, ¶9.

This was news to CS as a third-party patent analysis survey of TOPCon (Tunnell **O**xide **P**assivation **C**ONtact) patents, published in 2020, did not identify PO as having any patents related to TOPCon. EX1052 at 9 (Figure 7). A review of

the asserted patent's drawings, specification and claims confirms that nowhere is TOPCon ever mentioned or used as well. And within three years of purchasing Tetrasun, PO announced that it had abandoned and "shelve[d]" development and commercialization of the Tetrasun solar cell and reduced R&D headcount. EX1046, EX1047, EX1048. As a result, in 2016, PO claimed over a hundred million dollars in tax write-offs (including for "intangible assets," "goodwill," "abandoned" equipment, and "severance benefits to terminated employees" associated with the Tetrasun acquisition), demonstrating that it had no settled expectation of ever commercializing Tetrasun's technology. EX1049 (2016 10-K) at 58-59, 61, 98; EX1050.

B. PO Has No Settled Expectations of the Challenged Patent's Validity in View of the Yablonovitch and Kwark References

On top of its failed efforts to develop and commercialize Tetrasun's technology, PO has no settled expectations of the patent's validity. The article that PO itself submits as Exhibit 2013, "Silicon-based passivating contacts: The TOPCon route," traces the origins of the accused TOPCon technology to work in the 1980s, and to the very prior art relied upon by CS in its Petition. Specifically, the publication discusses the "technology and historical development of polysilicon-based passivating contacts" and credited and cited the early work of Yablonovitch and Kwark in the 1980s. EX2013 at 343 (citing publications by Kwark (refs. 27, 28) and Yablonovitch (ref. 29)). And the first publication to coin

the term “TOPCon” credited and acknowledged that this solar cell technology was based on the prior work of Yablonovitch and Kwark. EX1053, 270 (“Our approach, which we have called TOPCon (Tunnel Oxide Passivated Contact) is based on these prior approaches”); EX1054.

Despite this industry recognition, during prosecution of the challenged patent, the patent examiner was not presented with, nor did he independently locate, the Yablonovitch and Kwark references. As a result, the Examiner made material errors in allowing the patent, as these references disclose the limitations that the PO argued, and the Examiner identified, as missing from the claims. *See* Section III.B below. Thus, PO has no settled expectations when the Examiner made material errors and did not have before him the material prior art recognized by the PO’s own evidence and industry publications as the true origins of TOPCon.

C. CS Has Invested Billions in America

In stark contrast to PO’s lack of settled expectation and non-commercialization, CS had made substantial investments in the development and mass production of TOPCon solar products before PO ever notified CS of alleged infringement. Headquartered in Ontario, Canada, Canadian Solar Inc. (Petitioner’s ultimate parent) is a Canadian corporation founded in 2001 and publicly listed on NASDAQ. CS’s founder, Chairman, and CEO is a Canadian citizen. Neither he nor CS has any ties to the Chinese Communist Party or government. Contrary to

PO's misleading claims that it manufactures only in China, CS manufactures solar products in the US, Thailand, and China. In 2022, CS began mass producing so-called TOPCon solar cells, now accused by PO of infringing the challenged patent. EX1055. And in 2023, CS invested over \$250 million, building and establishing a new 5-Gigawatt solar module production facility in Mesquite, Texas to produce solar panels that incorporate these TOPCon cells. In addition to providing work for American construction companies, the new facility created over 1,500 manufacturing jobs here in America. EX1056. Mass production began in the fourth quarter of 2023 with its U.S.-made TOPCon panels delivered to customers around the same time. EX1057; EX1058. In 2023, CS also separately started construction of a new green-field heterojunction solar cell factory in Jeffersonville, Indiana, to supply American-made solar cells to its Texas facility. EX1059. This Indiana cell factory represents an investment of over \$800 million, creating an additional 1,200 highly technical manufacturing jobs in America in addition to the many skilled jobs required to build the factory in the first place. *Id.* Mass production is expected to begin in early 2026. *Id.* Overall, CS has already invested over \$1 billion in the U.S. and plans to invest an additional \$1.5 billion in its U.S. factories. Collectively, CS's U.S. factories are scheduled to employ over 4,000 American workers. (CS has also invested over \$700 million dollars building a lithium-ion battery plant in

Shelbyville, Kentucky, employing another 1,500 American workers when fully operational in 2026. EX1059-EX1060).

First Solar paints itself as a U.S. company, but it also manufactures products outside the U.S. including in “Malaysia, Vietnam, and India.” EX1066 at 4 and 45.

D. The District Court Litigation

Against this backdrop, in May 2025, months after first notifying CS that the challenged patent was allegedly so broad as to cover TOPCon technology, PO sued CS in Delaware District Court for alleged infringement of the challenged patent. EX1024. Three months later, in August 2025, CS promptly filed its IPR petition relying upon the fundamental disclosures in the Yablonovitch and Kwark references. CS’s primary reliance on Yablonovitch and Kwark distinguishes its petition from the one filed by JinkoSolar Co., Ltd. one month earlier in July 2025, in Case No. IPR2025-01130 on the same challenged patent.

As for the Delaware District Court case against CS, the Court has set a claim construction hearing for January 19, 2027, which is almost eleven months *after* the expected institution decision date (February 28, 2026) for the present IPR. EX1061 at 17. Fact discovery is not scheduled to close until April 9, 2027, which is over a year after the expected institution date. *Id.* Trial is set for March 27, 2028, more than a year *after* the projected Final Written Decision (February 28, 2027). *Id.*

Upon institution of the Petition, CS will request a stay of the Delaware action before Judge Hall, the presiding judge in Delaware, who routinely grants stays when IPR is instituted and the IPR estoppel effect could simplify the issues in district court. *Wildcat Licensing WI LLC v. BMW AG*, 19-834-JLH, 2020 WL 6940038, at *1-2 (D. Del. Nov. 25, 2020) (EX1075); *Cleveland Medical Devices, Inc. v. ResMed Inc.*, 1-22-cv-00794-JLH (D. Del. June 21, 2024) (EX1076).

III. PO Has No Settled Expectations, and The Equities Favor CS

A. PO Has Never Commercialized the Asserted Technology and Has Not Attempted to Enforce the Patent Until Recently

As the Director recognizes, the lack of commercialization, marking, licensing, enforcement, or application of the patent to Petitioner's products until recently negates any settled expectations by PO. *See Shenzhen Tuozhu Tech. Co., Ltd. v. Stratasys, Inc.*, IPR2025-00531, Paper 10, at 3 (July 17, 2025), citing *Intel Corp. v. Proxense LLC*, IPR2025-00327, Paper 12 at 2-3 (June 26, 2025).

PO's claim of being an innovator is not accurate. PO's own cited exhibit defines "[i]nnovation [a]s the process of transforming new ideas into practical applications that result in new or improved goods or services. It bridges the gap between conceptual breakthroughs and real-world impact, delivering tangible benefits to society and strengthening economic and technology capabilities." EX2018 at 19. The challenged patent is a paper patent, and PO never developed it into any product. Instead, PO expressly abandoned the Tetrasun process long

before in 2016. EX1046-EX1050. Then only after seeing the substantial investments that CS had made in TOPCon, PO dusted off a shelved Tetrasun patent — whose value it had long written off — to sue CS.

In its request, PO attempts to patch up this deficiency by speculating that CS “likely first became aware of First Solar’s ownership in TOPCon technology in April 2013, when First Solar announced that it would acquire TetraSun.” Request at 7. There is no basis for such speculation as there was no mention of TOPCon or the challenged patent in any of the press releases by First Solar. Likewise, citing to a 2014 submission by China’s Chamber of Commerce, PO argues that CS “indisputably was aware” by 2014 that “First Solar would soon be producing crystalline silicon-based products that would compete with the products of the Chinese producers.” Request at 8. This is again wrong and a red herring. Being aware of First Solar’s acquisition of Tetrasun does not equate to knowing that Tetrasun’s “crystalline-silicon-based products” were going to be TOPCon products or that there was a patent on it. The challenged patent was not mentioned in these documents, nor did they clearly describe Tetrasun’s product. There are many non-TOPCon crystalline silicon based products.

In all these arguments, PO ignores the fact that by July 2016, it had “pull[ed] the] plug” and “shelv[ed] TetraSun silicon cell development.” EX1046-1047.

Thus, PO's early activities (which were soon abandoned) do not support a settled expectation that the '074 patent is valid or would not be challenged.

Indeed, the "industry publication," which PO relies upon to allege that CS knew of First Solar's ownership of TOPCon, credits and cites the very prior art CS relies upon in its Petition as the origins of the accused TOPCon technology.

EX2013 at 343 (citing publications by Kwark (refs. 27, 28) (EX1006 & EX1007) and Yablonovitch (ref. 29) (EX1005)). As PO admits, this "industry publication" only vaguely "suggests that [Tetrasun's] passivating contact technology is based on poly-Si/SiO₂ structures" but does not directly indicate that it is so. Request at 9. When an objective third party surveyed the patent landscape for TOPCon in 2020, they did not identify Tetrasun or PO as having any patents related to the accused TOPCon technology. EX1052 at 9 (Figure 7). This demonstrates the obscurity of the challenged patent, which is not directed at TOPCon but only uses broad language in attempt to cover a long list of materials including those not used by TOPCon. EX1001, 5:30-6:69.

B. The Examiner Committed Material Errors in Allowing the Challenged Patent

PO's own exhibit traces the origins of the accused TOPCon technology to works by Yablonovitch and Kwark in the 1980s, which are the primary references in CS's Petition. EX2013 at 343 (references 27-29). Likewise, the first paper that coined the term "TOPCon" acknowledged that this technology "was based on these

prior approaches” by Yablonovitch and Kwark. EX1053 at 270. PO’s exhibit also relates that in 2005, Richard Swanson, co-author of the Yablonovitch and Kwark papers, “reminded the community of the[se] old activities” in the 1980s and the “excellent potential of such structures” in his “visionary paper ‘Approaching the 29% limit efficiency of solar cells.’” EX2013 at 343, citing EX1062; EX1063.

During prosecution, the Examiner was not presented with Yablonovitch or Kwark, nor did he independently find them. Thus, the Examiner made material errors by overlooking the teachings of Yablonovitch or Kwark. *See Carbyne, Inc. v. Tritech Software Systems*, IPR2025-00959, Paper 11 at 2 (Oct. 3, 2025) (“Office erred in a manner material to patentability during patent examination” when the IPR relied upon prior art “appear[ing] to disclose the purportedly missing claim limitations”); *Anthony, Inc. v. ControlTec, LLC*, IPR2025-00559 and -00636, Paper 12 at 2 (July 16, 2025) (settled expectations overcome because “patent examiner erred by overlooking the teachings of” the asserted prior art).

Specifically, CS’s Petition explains that during prosecution:

(1) PO first argued that it was “novel” to have a “conductive and passivating layer comprising a dopant deposited on at least one interface passivating layer over a substrate.” Pet. at 8-9 citing EX1002, 371. But Yablonovitch discloses an “oxidation step” step 5 that grows a layer of silicon oxide corresponding to the claimed “interface passivating layer” and thereafter

deposits in step 6 a doped SIPOS layer that constitutes the claimed “conducting and passivating layer.” Pet. at 12, 16-17, 32-35 citing EX1005, 1212, Table 1. Kwark likewise forms an “intentionally grown chemical oxide” (“interface passivating layer”) and then deposits in-situ doped polysilicon (“conducting and passivating layer”). Pet. at 13, 18-19, 63-65 citing EX1006, 742-743.

(2) PO also distinguished the art by pointing to the claimed thermal treatment as (1) “improv[ing] the passivating qualities of the conductive and passivating layer through its crystallization” and (2) “allow[ing] dopant diffusion out of the conductive and passivating layer through the interface passivation layer(s).” Pet. at 9 citing EX1002, 372. The Petition explains that both Yablonovitch and Kwark also taught these features and advantages. Yablonovitch discloses heating at 900°C (1) “to precipitate the microcrystalline silicon grains within the material” thus “crystallizing” the SIPOS layer, and (2) such that “the phosphorus [dopant] diffuses [through the SiO_x layer] about 20-50 Å into the silicon wafer as measured by secondary ion mass spectrometry.” Pet. at 35-36 citing EX1005, 1212. Kwark also discloses that (1) “during annealing [i.e., heating at 900-1,000°C] it has been found that the [SIPOS] film morphology changes. Si precipitates into small grains of crystalline Si.” Pet. at 66 citing EX1007, 1121 and EX1006 (Fig. 3). It also discloses (2) diffusion out of the SIPOS or polysilicon “emitter C” through the chemical oxide into the substrate/base. Pet. at 66 citing

EX1006, 743 (“emitter C which relied solely on outdiffusion from the doped POLY to form the base-emitter junction.”); EX1007, 1123 (“emitter C relied solely on outdiffusion from the in-situ doped SIPOS or poly-silicon to provide sufficient surface doping concentration.”).

(3) The Examiner’s notice of allowance accepted PO’s arguments and additionally stated that “there is no teaching or motivation to provide metallization as electrodes which directly contact the conductive and passivation layer.” Pet. at 11, citing EX1002, 485. But Yablonovitch disclosed a metal electrode directly contacting the SIPOS/conductive and passivation layer. Pet. at 41-42 citing EX1005, 1212, FIG. 2 (the SIPOS is “contacted with ... a silver electrode,” denoted “Ag” in Figure 2). Alternatively, the combinations of Yablonovitch or Kwark with Froitzheim (EX1008) disclose this element. Pet. at 38-44, 67-68.

(4) The notice of allowance also distinguished another prior art as disclosing an “interface layer” that was “necessarily crystalline as a result of the deposition step,” i.e., not “amorphous” as the challenged claim requires. EX1002, 485. The “amorphous” limitation is also met by Yablonovitch and Kwark because the silicon oxide layer in both references is amorphous, as explained in the Petition. Pet. at 32 (“Silicon oxide formed by oxidizing a silicon substrate is generally amorphous”), citing EX1005, 1212, Table II, EX1021, 085212-1, and EX1003, ¶135; Pet. at 63, citing EX1006, 742-743, EX1021, 085212-1, EX1003,

¶¶250-252. *See also*, EX1017, 225-226 (RCA formed interfacial oxide layer exhibited “characteristic behavior for an amorphous material.”)

The Petition also explains that the application of Yablonovitch or Kwark to the embodiments disclosed by Froitzheim meets the “shortened carrier flow paths” limitation via Yablonovitch and Kwark’s express disclosure of high temperature treatment and dopants diffusing from the SIPOS/polysilicon layer through the substrate. Pet. at 40-44, 67-68. The Skilled Artisan would have been motivated to modify the solar cells of Froitzheim with the interfacial oxide layer and high temperature formed SIPOS-based emitter with diffused dopants, as taught by Yablonovitch or Kwark, because they and others explicitly reported that such modified solar cells exhibit improved performance in terms of saturation current and passivation. Pet. at 24-26 citing EX1005, 1211-1212 and EX1029, 2122 (Fig. 9) and Pet. at 56-59 citing EX1006, 742 (incorporation of these films “translates into potential improvements of energy conversion efficiency for solar cells.”)

In view of the challenged patent’s unpatentability, CS respectfully requests that the Director institute review and allow the Board to correct the Examiner’s material errors, which overcomes any alleged settled expectations by PO (though none exist). *See Anthony*, IPR2025-00559 and -00636, Paper 12 at 2 (reviewing 18 year old patent to correct office’s “material error”); *Skullcandy, Inc. v. Earin AB*, IPR2025-00690, Paper 9 at 2 (July 31, 2025) (material error outweighed PO’s

settled expectations); *Activision Blizzard, Inc. v. Milestone Entertainment, LLC*, IPR2025-00708, 00711, 00712, Paper 13 (Aug. 14, 2025) (same).

C. CS Invested in and Commercialized the Accused Product Before PO's Notice of Alleged Infringement

PO only notified CS of alleged infringement of the challenged patent in September 2024 (EX1024, ¶9), long after CS had made substantial investments in developing and commercializing its TOPCon products. EX1055-1058. PO started suing in early 2025, first JinkoSolar in February 2025 and then CS in May 2025. Given PO's abandonment of Tetrasun technology and the absence of Tetrasun patents in a third-party patent survey for TOPCon, CS did not anticipate that it would be facing suit from PO on the challenged patent when it invested in TOPCon. *See Home Depot U.S.A., Inc. v. H2 Intellect LLC.*, IPR2025-00480, Paper 11 at 2-3 (Sept 4, 2025) (refusing discretionary denial where petitioner "did not have reason to anticipate assertion of the patent against it").

PO mistakenly alleges that CS had- awareness of the challenged patent "no later than 2023" by claiming that the challenged patent was cited in a patent application in China filed by "Canadian Solar entities." Request at 9-10. However, the Chinese patent application is by an entity named Jiaxing ATES Tech Research Institute Co. Ltd. EX1079. And the challenged patent was not cited; only the published application was cited in the search report by the Chinese National IP Office, and not as an anticipatory or material art. The published application was

also never used in any office action to reject the patent application. EX1080 (First Notice of Examination Opinion); EX1081 (Second Notice of Examination Opinion). That citation of the published application, in a long line of references in the search report, reasonably did not draw attention to the challenged patent, neither of which refers to TOPCon. Thus, contrary to PO's assertion and speculation, CS could not have gained awareness of the challenged patent through this search report or that the patent would be used against it. It was not until September 2024 that PO attempted to tie the challenged patent to CS's products and sued CS in May 2025. CS acted reasonably expeditiously in filing its Petition.

D. Challenges to the “Settled Expectation Rule”

Multiple parties have filed writs of mandamus challenging the “settled expectation rule.” *In re SanDisk Tech., Inc.*, No. 25-152 (Fed. Cir., filed Sept. 18, 2025); *In re Cambridge Industries USA Inc.*, No. 26-101 (Fed. Cir., filed Oct. 10, 2025). To preserve its rights, Canadian Solar respectfully asks the Director to disregard the “settled expectation rule” relied upon by PO for the reasons expressed in those writs.

IV. U.S. Treaty Obligations and CS's Investments in U.S. Manufacturing Weigh Against PO's Non-Existent National and Economic Security Concerns

PO has not shown any nexus between its national and economic security arguments and a determination of whether the PTAB should review its invalid

patent. PO's rhetoric not only politicizes economic issues but also undermines the integrity of the U.S. patent system. PO's attempt to cast aspersions on CS, referring to "deep ties to a foreign adversary (China)," is not only misleading, but also contrary to the non-discrimination principles agreed to by the U.S. under Article 3 of the TRIPS Agreement, negotiated as part of General Agreement on Tariffs and Trade (GATT). EX1077 at 1-2. CS was founded in Canada. Its founder, Chairman, and CEO is a Canadian citizen. While it has operations in China, like many U.S. and North American companies, it has no ties to the Chinese Communist Party or Chinese government. It has never been listed in the U.S. government BIS entity list. PO's request misleadingly blurs the distinction between China and the current Chinese government.

Article 3 of the TRIPS Agreement provides that "[e]ach Member shall accord to the nationals of other Members treatment no less favourable than that it accords to its own nationals with regard to the protection of intellectual property." EX1077 at 1-2. "Protection" in Article 3 is defined to include, not only the "availability, acquisition, scope, maintenance and enforcement of intellectual property rights," but also "those matters affecting the use of intellectual property rights specifically addressed in this Agreement." *Id.* at 3, footnote 3.

Here, refusing to review CS's Petition based on its foreign origins and operations would discriminate against nationals of a treaty member and would not

be providing equal treatment on a matter that affect the alleged use of the challenged patent. PO's aspersions have no place in the consideration.

In fact, PO's characterization that CS's "operations are *based in* China and East Asia" using a "North American branding" is contrary to its admission in the Delaware District Court proceeding that CS "is a group of companies *based in Canada* that manufacture solar cells outside the United States." EX1078 (9/15/25 Letter to Judge Hall). While it manufactures products in China, like many other U.S. and North American companies have done, CS answered the call of bringing back manufacturing in the U.S. years ago. Since 2023, CS has invested billions of dollars building three factories across the U.S. employing over 4,000 American workers. EX1056, EX1059-1060. These investments in U.S. manufacturing in the last few years demonstrate CS's commitment to proactively address any U.S. concerns, including dumping allegations. They not only overcome any alleged historical "dumping" of imported solar products that PO posits, but they also underscore CS's dedication to U.S. economic and national interests.

PO's allegation that CS "has long sought to harm US interests" is simply false. Request at 2. Indeed, CS's investments in producing solar and battery products in the U.S. are undisputedly in the U.S.'s interest. Referring to CS's investments in his state, Governor Beshear of Kentucky recognized that "[t]his is energy security for the United States," and "[i]t's in our national security. And this

company [CS] choosing to do it in Kentucky means we're going to be a part of providing that security for the entire country's infrastructure and in the grid."

EX1060 at 3-4. In Texas, Governor Abbott "thank[ed] Canadian Solar for choosing Texas for [its] investment and for creating 1,500 new jobs in the region to help boost the community for generations to come." EX1056. U.S. Senator Mike Braun for Indiana likewise recognized that CS's "new solar manufacturing facility opening in Jeffersonville will create many new jobs for Hoosiers and stimulate the local economy." EX1059. CS's ability to make these investments relies on the availability of IPRs to challenge invalid patents, such as the challenged patent here.

Finally, PO's unverified accusations of use of forced labor without any evidence should be rejected. Request at 11-12. Tasked with enforcing forced labor laws, the U.S. Customs and Border Patrol has never deemed Canadian Solar's products as being produced using any forced labor practices.

V. The *Fintiv* Factors Weigh Against Discretionary Denial

The *Fintiv* factors weigh against discretionary denial. *Apple Inc. v Fintiv, Inc.*, IPR2020-00019, Paper 11 at 9 (PTAB Mar. 20, 2020). Institution is favored because there will be little duplication with the parallel district court litigation. The district court's scheduled Markman hearing (January 19, 2027) is almost a year after the expected institution decision date (February 28, 2026), and trial (March 27, 2028) is more than one year after the projected Final Written Decision date

(February 28, 2027). EX1061 at 17. This “counsel[s] against discretionary denial.” *Nintendo Co. v. Resonant Sys. Inc.*, IPR2025-00680, Paper 18 at 2 (Aug. 14, 2025).

Judge Hall, the presiding judge in the district court litigation, has granted 67-70% of motions for stay pending IPR. EX1068 (12 of 17). Under the circumstances, she is very likely to grant a stay when the IPR here is instituted because the case will still be at an early stage and little investments would have been made in the district court proceedings. *Wildcat Licensing*, 2020 WL 6940038, at *1-2 (staying case pending IPR and after institution noting that the Markman hearing is yet to be held, few depositions have been taken and expert discovery has not begun) (EX1075); *Cleveland Medical Devices*, 1-22-cv-00794-JLH (EX1076) (staying case after IPR institution because “resource-intensive phases of the case still lie ahead”). By the institution date, the parties would have only exchanged preliminary contentions, initial discovery responses, and some initial documents in the district court. EX1061 at 16. The resource-intensive stages remain in the future. *Id.* And IPR estoppel will also apply to avoid duplication and inconsistent decisions. Thus, a stay of the district court litigation is very likely when IPR is instituted.

VI. *General Plastics* Factors Do Not Apply and Favor Institution

By not addressing them, PO tacitly agrees that the *General Plastic* factors do not apply. Although CS’s petition is one month after the parallel JinkoSolar

petition, CS and JinkoSolar are direct competitors and do not have any relationship to each other. EX1067 (JinkoSolar 20-F) at 73. This fact dispositively weighs against denial. *Skechers USA, Inc. v. Nike, Inc.*, IPR2025-00142, Paper 11 at 7 (PTAB, Jun. 12, 2025) (for direct competitors, “remaining *General Plastic* factors fall by the wayside.”); *Fujifilm Corp. v. Optimum Imaging Techs. LLC*, IPR2024-01374, Paper 19 at 26 (PTAB, Apr. 29, 2025) (same).

Even if the other factors are considered, they also weigh against denial. The short gap between JinkoSolar’s IPR and CS’s filing is reasonable and results only from PO’s own litigation activities in serially suing different entities. *See Illumina, Inc. v. Ravgen, Inc.*, IPR2021-01271, Paper 12 at 14-15 (PTAB Jan. 26, 2022) (“a few-months gap between the first Petition and the [second] Petition is not unreasonable” where the PO sued multiple entities). And CS’s IPR relies on different principal prior art which the industry recognizes as the origins of the TOPCon technology. Denying CS’s petition “would prejudice [CS] in this proceeding should the [JinkoSolar Petition] be resolved by settlement” or denied by the Director. *Lowe’s Cos., Inc. v. Nichia Corp.*, IPR2017-02011, Paper 13 at 19 (PTAB, Mar. 12, 2018). The Director and the same PTAB judges can coordinate the two schedules, hear and decide the two Petitions close in time, thereby conserving Board resources by preserving familiarity and expertise.

Dated: November 4, 2025

Respectfully submitted,

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CERTIFICATE OF COMPLIANCE

I hereby certify that this brief complies with the type-volume limitations because it contains 20 pages, excluding the parts of the brief exempted by 37 C.F.R. § 42.24.

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6(e), I hereby certify that on this 4th day of November, 2025, I caused to be served a true and correct copy of the foregoing and any accompanying exhibits by e-mail on the following counsel:

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Attachment A:
Petitioner's Updated Exhibit List

Exhibit #	Reference Name
1001	U.S. Patent No. 9,130,074
1002	File History of U.S. Patent No. 9,130,074
1003	Declaration of Dr. Stephen Shea Regarding U.S. Patent No. 9,130,074
1004	Curriculum Vitae of Dr. Stephen Shea
1005	E. Yablonovitch, et al., A 720 mV open circuit voltage SiO _x :c-Si:SiO _x double heterostructure solar cell, Appl. Phys. Lett. 47 (11) (Dec. 1, 1985) (“Yablonovitch”)
1006	Y.H. Kwark et al., “SIPOS Heterojunction contacts to silicon,” International Electron Devices Meeting (1984): 742-745 (“Kwark”)
1007	Y.H. Kwark, et al., <i>N-Type SIPOS and Poly-Silicon Emitters</i> , Solid-State Elecs. Vol. 30, No. 11, pp. 1121-1125 (1987)
1008	EP 1732142 A1 (“Froitzheim”)
1009	R. Neville, <i>Solar Energy Conversion: The Solar Cell</i> , 2nd Ed. (Elsevier 1995) (excerpted) (“Neville”)
1010	H. Sasaki, et al., Light Trapping for Thin-Film Silicon Solar Cells Fabricated on Insulator, Jpn. J. Appl. Phys., Vol. 33, pp. 3389-3392 (1994) (“Sasaki”)
1011	U.S. Patent No. 4,525,593 (“Yablonovitch Patent”)
1012	J.Y. Gan, et al, Polysilicon Emitters for Silicon Concentrator Solar Cells, Twenty First IEEE Photovoltaic Specialists Conference-1990, Vol. 1, pp. 245-250 (“Gan”)
1013	W. Fussel, et al., Structural, optical and electrical properties of SIPOS passivation layers, Microelectronic Engineering 22 (1993) 355-358 (“Fussel”)
1014	G. Compagnini, Optical and structural properties of semi-insulating polycrystalline silicon thin films, J. Mater. Res., Vol. 10, No. 4 (Apr 1995) (“Compagnini”)

Exhibit #	Reference Name
1015	Y. Pan, et al., Study on the optical absorption of oxygen-doped polysilicon thin films, Optical Engineering 32(3), 589-592 (March 1993) (“Pan”)
1016	I. Post, et al., Polysilicon Emitters for Bipolar Transistors: A Review and Re-Evaluation of Theory and Experiment, IEEE Transactions on Electron Devices, Vol. 39. No. 7 (July 1992) (“Post”)
1017	G.R. Wolstenholme, et al., An investigation of the thermal stability of the interfacial oxide in polycrystalline silicon emitter bipolar transistors by comparing device results with high-resolution electron microscopy observations, J. Appl. Phys. 61 (1) (January 1987) (“Wolstenholme”)
1018	Michael Quirk and Julian Serda, Semiconductor Manufacturing Technology, Prentice-Hall, Inc. (2001) (“Quirk”)
1019	A. Luque, et al., Handbook of Photovoltaic Science and Engineering, John Wiley & Sons Ltd. (2003) (“Luque”)
1020	F. A. Lindholm, A. Neugroschel, M. Arienzo, and P. A. Iles. "Heavily Doped Polysilicon-Contact Solar Cells." IEEE Electron Device Letters, volume 6, number 7, July 1985, pages 363-365 (“Lindholm”)
1021	K. Tatsumura, et al., Residual order within thermally grown amorphous SiO ₂ on crystalline silicon, Phys. Rev. B 69, 085212 (2004) (“Tatsumura”)
1022	US Patent No. 7,851,336 (“Poplavskyy”)
1023	File History of US Patent No. 7,851,336 (excerpt)
1024	Complaint for Patent Infringement, <i>First Solar Inc. v. Canadian Solar Inc., et al.</i> , Case No. 1:25-cv-00582-JLH, Dkt. 1 (D. Del.)
1025	Y.H. Kwark., et al., Optical Absorption of Thin SIPOS Films, J. Electrochem. Soc., Solid-State Science and Technology, Vol. 129, No. 1, pp. 197-201 (1982) (“Kwark III”)

Exhibit #	Reference Name
1026	B. Streetman, et al., Solid State Electronic Devices, Sixth Ed., Prentice Hall (2006) (“Streetman”)
1027	P. Ashburn, et al., Comparison of Experimental and Theoretical Results on Polysilicon Emitter Bipolar Transistors, IEEE Transactions on Electron Devices, Vol. ED-31, No. 7 (July 1984) (“Ashburn”)
1028	E. Yablonovitch, et al., A Study of n ⁺ -SIPOS:p-Si Heterojunction Emitters, IEEE Electron Device Letters, Vol. EDL-6, No. 11 (Nov. 1985) (“Yablonovitch 1984”)
1029	R. Sinton, et al., Design Criteria for Si Point-Contact Concentrator Solar Cells, IEEE Transactions on Electron Devices, Vol. ED-34, No. 10 (Oct. 1987)
1030	A. Zuoari, et al., Simple analytical solution and efficiency improvement of polysilicon emitter solar cells, Solar Energy Materials & Solar Cells 92 (2008) 313–322 (“Zouari”)
1031	R. Fair, Physical Models of Boron Diffusion in Ultrathin Gate Oxides, J. Electrochem. Soc., Vol. 144, No. 2 (Feb. 1997) (“Fair”)
1032	U.S. Patent No. 8,222,516 (“Cousins”)
1033	First Solar’s Patent Marking Notification List (<i>available at</i> https://www.firstsolar.com/-/media/First-Solar/Documents/Patents/Patent-Marking-Notification.pdf as of August 14, 2025)
1034	U.S. Patent No. 4,667,060 (“Spitzer”)
1035	T. Matsushita, et al., Highly Reliable High-Voltage Transistors by Use of the SIPOS Process, IEEE Transactions on Electron Devices, Vol. ED-23, No. 8 (Aug. 1976) (“Matsushita”)
1036	P. Borden, et al., Polysilicon Tunnel Junctions as Alternates to Diffused Junctions, 23rd European Photovoltaic Solar Energy Conference, 1-5 September 2008 (“Borden”)

Exhibit #	Reference Name
1037	M. Janai, et al., Optical Properties and Structure of Amorphous Silicon Films Prepared by CVD, Solar Energy Materials 1 (1979), pp. 11-27 (“Janai”)
1038	S. Silvestre, Series Resistance in Double-Polysilicon-Contacted Silicon Solar Cells, 25th PVSC, 13-17 May 1996 (“Silvestre”)
1039	K. Shimakura, et al., Boron and Phosphorous Diffusion Through an SiO ₂ Layer From a Doped Polycrystalline Si Source Under Various Drive-In Ambients, Solid-State Elecs., Vol. 18, pp. 991-997 (1975) (“Shimakura”)
1040	OSTI Printout for Kwark (EX1006)
1041	IEEE web page print out for Kwark (EX1006)
1042	U.S. Patent No. 5,661,079 (“Harmel”)
1043	Declaration of James L. Mullins, Ph.D
1044	U.S. Patent App. Pub. No. 2008/0041526 (“Pass”)
1045	J. Arumughan, et al., Simplified edge isolation of buried contact solar cells, Solar Energy Materials & Solar Cells 87 (2005) pp. 705-14
1046 [NEW]	“First Solar shelves TetraSun silicon cell development,” Optics.org (July 7, 2016)
1047 [NEW]	“First Solar pulls plug on TetraSun, returning focus to CdTe,” rechargenews.com (July 5, 2016)
1048 [NEW]	M. Osborne, “First Solar ends heterojunction foray; shifts Malaysian plant to CdTe Series 5 assembly,” pv-tech.org (July 5, 2016)
1049 [NEW]	First Solar, Inc., Form 10-K (2016)
1050 [NEW]	“First Solar Shifts Malaysian Production Capacity to Series 5 Assembly,” businesswire.com (July 5, 2016)

Exhibit #	Reference Name
1051 [NEW]	“First Solar to Acquire TetraSun to Expand Addressable Market Opportunity,” businesswire.com (Apr. 9, 2013)
1052 [NEW]	C. Tsai, et al., “Patent Analysis of High Efficiency Tunneling Oxide Passivated Contact Solar Cells,” <i>Energies</i> 2020, 13, 3060 (June 12, 2020)
1053 [NEW]	F. Feldmann, et al, “Passivated rear contacts for high-efficiency n-type Si solar cells providing high interface passivation quality and excellent transport characteristics,” <i>Solar Energy Material & Solar Cells</i> , 120 (2014) 270-274 (Oct. 11, 2013)
1054 [NEW]	F. Feldmann, et al., “A passivated rear contact for high-efficiency n-type silicon solar cells enabling high V_{oc} and $FF > 82\%$,” 28th European PV Solar Energy Conference and Exhibition 30 September – 4 October, 2013, Paris, France
1055 [NEW]	“Canadian Solar To Start Mass Production Of Topcon Modules With Power Output Up To 690W,” prnewswire.com (Dec. 15, 2022)
1056 [NEW]	“Canadian Solar Announces U.S. Module Manufacturing Facility In Mesquite, Texas,” prnewswire.com (June 15, 2023)
1057 [NEW]	JP Casey, “Canadian Solar delivers first US-made TOPCon modules to distributor Signature Solar,” pv-tech.org (Jan. 15, 2024)
1058 [NEW]	J. Tourino, et al., “Canadian Solar launches 5GW TOPCon module assembly plant in Texas,” pv-tech.org (June 12, 2024”)
1059 [NEW]	“Canadian Solar Announces U.S. Solar Cell Manufacturing Facility In Jeffersonville, Indiana,” prnewswire.com (Oct. 30, 2023)
1060 [NEW]	B. Schreiner, “Canadian Solar announces nearly \$712 million project for Kentucky battery plant, renewableenergyworld.com (Nov. 18, 2024)
1061 [NEW]	Scheduling Order, D.I. 27, <i>First Solar, Inc. v. Canadian Solar Inc.</i> , C.A. No. 1:25-cv-582 (JLH) (D. Del.)

Exhibit #	Reference Name
1062 [NEW]	S. Swanson, et al., “Approaching The 29% Limit Efficiency Of Silicon Solar Cells,” IEEE (2005)
1063 [NEW]	S. Swanson, et al., Abstract of “Approaching The 29% Limit Efficiency Of Silicon Solar Cells,” IEEE Xplore (Aug. 8, 2005)
1064	[Intentionally omitted]
1065	[Intentionally omitted]
1066 [NEW]	First Solar, Inc., Form 10-K (2024)
1067 [NEW]	JinkoSolar Holding Co., Ltd., Form 20-F (2024)
1068 [NEW]	Docket Navigator Motion Success Data (snapshot taken Oct. 9, 2025) (graphing outcome of motions to stay pending IPR by Judge Jennifer Hall)
1069	[Intentionally omitted]
1070	[Intentionally omitted]
1071	[Intentionally omitted]
1072	[Intentionally omitted]
1073	[Intentionally omitted]
1074	[Intentionally omitted]
1075 [NEW]	Memorandum Order, <i>Wildcat Licensing WI LLC v. BMW AG</i> , 19-834-JLH, 2020 WL 6940038, at *1-2 (D. Del. Nov. 25, 2020)
1076 [NEW]	Text Order, <i>Cleveland Medical Devices, Inc. v. ResMed Inc.</i> , 1-22-cv-00794-JLH (D. Del. June 21, 2024)
1077 [NEW]	Uruguay Round Agreement: TRIPS, “Part I — General Provisions and Basic Principles,” World Trade Organization

Exhibit #	Reference Name
1078 [NEW]	Letter to Hon. Judge Hall, D.I. 25, <i>First Solar, Inc. v. Canadian Solar Inc.</i> , C.A. No. 1:25-cv-582 (JLH) (D. Del.)
1079 [NEW]	First Solar, Inc., Form 20-F (2024)
1080 [NEW]	First Office Action, Chinese Pat. App. No. 202011335191.9
1081 [NEW]	Second Office Action, Chinese Pat. App. No. 202011335191.9