

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AFFORDABLE WIRE MANAGEMENT, LLC,
Petitioner

v.

CAMBRIA COUNTY ASSOCIATION FOR THE BLIND AND HANDICAPPED, INC.,
Patent Owner

IRP2024-00178
Patent 11,349,291

**DECLARATION OF MINH P. DOAN
IN SUPPORT OF PETITIONER'S RESPONSE**

October 17, 2024

TABLE OF CONTENTS

I. Introduction.....	1
A. Assignment	1
B. Qualifications And Experience	2
C. Documents Considered	3
II. Summary Of Opinions.....	3
III. Relevant Case Background	5
A. CAB	5
B. AWM	6
C. The '291 Patent	7
D. The '551 Patent	8
E. Solar Power Industry.....	9
F. CAB's Above-Ground Cable Management Products	12
IV. Legal Framework Relating to Commercial Success.....	15
V. Overview of The Putnam '291 Declaration	16
A. Claimed Excess Sales	18
B. Nexus of Claimed Excess Sales to the '291 and '551 Patents	19
VI. Dr. Putnam has Failed To Demonstrate Commercial Success of CAB Products and the Nexus to the '291 Patent.....	22
A. Dr. Putnam's Evaluation of "Excess Sales" is Flawed and Does Not Establish Commercial Success of CAB Products	22
1. Dr. Putnam Failed to Evaluate [REDACTED]	24
2. Dr. Putnam Failed to Demonstrate that a "Substantial Number of Consumers" in the Market Purchased CAB's Patented Products	27
3. Growth in Net New PV Capacity Is Not an Appropriate Benchmark for Solar Cable Management Products.....	29
4. Dr. Putnam Failed to [REDACTED]	33
5. Dr. Putnam's Calculation of "Excess Sales" is Nothing More Than a Mathematical Exercise and Lacks Economic Meaning	36
6. CAB's Claimed Standard System Has Not Achieved Commercial Success Based on Dr. Putnam's Own Benchmark.....	37
B. Dr. Putnam Has Not Established a Nexus Between CAB's Claimed Excess Sales and the '291 Patent	40

1.	Dr. Putnam’s Own Admissions Highlight the Lack of Nexus Between Claimed Excess Sales and the ’291 Patent	41
2.	Dr. Putnam Failed to Consider CAB’s Other Patents as Potential Contributors to the Sales of CAB’s Products	42
3.	Dr. Putnam’s 50 Percent Division of CAB’s Claimed Excess Sales Between the ’291 and ’551 Patents is Arbitrary and Unsupported.....	45
VII.	Dr. Putnam has Failed to Establish That Claimed Cost Savings of CAB’s Products Are Entirely (If At All) Attributable to the Claimed Inventions of the ’291 Patent	48
A.	Dr. Putnam Did Not Rule Out That CAB’s Other Patents Contributed to the Claimed Cost Savings	48
B.	[REDACTED]	49
C.	[REDACTED]	51
D.	Dr. Putnam’s Evaluation of Cost Savings from CAB’s Integrated System is Misleading	53

I. INTRODUCTION

A. Assignment

1. I have been retained by counsel for Affordable Wire Management, LLC (“AWM” or “Petitioner”) to evaluate the opinions of Dr. Jonathan Putnam, an expert retained by Patent Owner Cambria County Association for the Blind and Handicapped, Inc. (“CAB”), regarding the commercial success of the invention described in U.S. Patent No. 11,349,291 (the “’291 Patent”). On November 10, 2023, AWM filed petition for *inter partes* review for the ’291 Patent which was instituted on April 24, 2024.¹ The challenged claims are presented in **Table 1**.

Table 1
The ’291 Patent²

Patent	Challenged Claims	Priority Date	Issuance Date	Expiration Date
11,349,291 (the “’291 Patent”)	1 – 10, 14 – 22, and 24 – 25	11/29/2014	05/31/2022	11/29/2034

2. On July 24, 2024, Dr. Jonathan Putnam submitted a declaration (“Putnam ’291 Declaration”) with respect to IRP 2024-00178 regarding the ’291 Patent in which he was asked “to examine the commercial success of CAB products that are coextensive” with the ’291 Patent and another CAB patent, U.S. Patent No. 10,177,551 (the “’551 Patent”), “as a factor for secondary considerations supporting the patents’ non-obviousness.”³ Dr. Putnam concluded that “the ’291 patent and the ’551 patent each caused CAB’s substantial

¹ Petition for Inter Partes Review IPR 2024-00178 dated November 10, 2023. *See also* Decision Granting Institution of Inter Partes Review IRP 2024-00178 dated April 24, 2024. In the decision granting *inter partes* review, the Patent Trial and Appeals Board (“PTAB”) determined that there was a “reasonable likelihood” of prevailing in showing at least one of the challenged claims is unpatentable with respect to the ’291 Patent.

² U.S. Patent No. 11,349,291. *See also* “Locking cable hanger and method of using,” Google Patents. (<https://patents.google.com/patent/US11349291B2/en?q=11349291>, viewed on October 11, 2024.) *See also* Petition for Inter Partes Review IPR 2024-00178 dated November 10, 2023.

³ Expert Declaration of Jonathan Putnam dated July 24, 2024, EX2044 in IPR2024-00178 (“Putnam ’291 Declaration”), p. 3.

commercial success, which strongly supports CAB’s position that each of the patents was not obvious at the time it was invented.”^{4, 5}

3. I have been requested by counsel for AWM to respond to the opinions presented in the Putnam ’291 Declaration. My opinions and the bases for my opinions are contained in the remainder of this declaration.

B. Qualifications And Experience

4. I am a Vice President at Analysis Group, Inc. (“AG”). AG provides economic, financial, and business strategy consulting to its clients and specializes in the interpretation of economic and financial data and the development of economic and financial models. AG consists of approximately 1,000 professionals who specialize in, among other things, the fields of economics, accounting, finance, statistics, and strategy consulting.
5. My primary responsibility at AG is to provide financial, economic, and damage quantification consulting services to clients. For more than 15 years, I have performed evaluations of economic damages in intellectual property, breach of contract, false advertising, class certification, and other general commercial litigation matters. I have extensive experience analyzing lost sales, lost profits, reasonable royalties, and commercial success issues. The clients I have worked with cover a variety of industries including computer hardware and software, mobile devices, medical devices, construction materials,

⁴ Putnam ’291 Declaration, pp. 41 – 42.

⁵ On November 3, 2023, AWM filed petition for *inter partes* review for the ’551 Patent which was instituted on May 13, 2024. In the Putnam ’291 Declaration, Dr. Putnam addressed both the ’291 and ’551 Patents. I also have been requested by counsel for AWM to evaluate the secondary considerations of commercial success as it relates to the claimed non-obviousness of the ’551 Patent. I will submit my expert declaration responding to Dr. Putnam’s commercial success opinions with respect to the ’551 Patent on November 1, 2024. However, as Dr. Putnam discussed both the ’551 and ’291 Patents in his expert declaration for the ’291 Patent, I also discuss the ’551 Patent in my response to Dr. Putnam.

automotive technology, consumer products, internet services, financial services, oil and gas, among others.

6. I hold a B.A. in Economics and Mathematics from Berea College, a M.A in Economics from Northwestern University, and a M.S. in Actuarial Science from the University of Iowa. Attached as **Appendix A** is a true and correct copy of my current resume. My business address is Analysis Group, Inc., Park Place Center, 2911 Turtle Creek Blvd., Suite 600, Dallas, Texas, 75219.
7. AG is being compensated based upon hours incurred and the hourly rates of the personnel involved. Payment to AG is not contingent upon my findings or the outcome of this matter. AG is being compensated at a rate of \$750 per hour for my time. Hourly rates for other staff at AG working on this matter range from \$445 to \$750 per hour, depending upon the level and experience of the staff involved.

C. Documents Considered

8. The documents, materials, and other information I considered in conducting my analysis and in forming my opinions are listed in this declaration, its attached exhibits, and/or in **Appendix B**.
9. My analysis and opinions are based upon the information available to me as of the date of my declaration, standard economic theory, and my education and training. The information I am relying upon is information typically relied upon by experts in my field. If additional information or materials become available to me, or if CAB presents further expert testimony, I reserve the right to update my opinions and analysis as appropriate.

II. SUMMARY OF OPINIONS

10. As detailed throughout my declaration, Dr. Putnam has not reliably established that CAB's above-ground cable management systems achieved commercial success, let alone achieved

commercial success because of the challenged claims of the '291 Patent. I have reached this conclusion based upon the following considerations.

- a. Dr. Putnam's evaluation of "excess sales" is fundamentally flawed and does not establish commercial success of CAB Products for at least the following reasons.
 - i. Dr. Putnam did not assess [REDACTED]
 - ii. Dr. Putnam did not demonstrate that [REDACTED] There is no evaluation of the size of the relevant market or CAB's market share, making it impossible to conclude that CAB's products were widely adopted.
 - iii. Dr. Putnam's use of growth in net new photovoltaic capacity as a benchmark for CAB's sales is inappropriate. The growth rate of photovoltaic capacity does not accurately reflect the market for cable management products, and changes in solar power plant design, such as the adoption of tracking systems, were not accounted for in his analysis.
 - iv. Dr. Putnam's failure to [REDACTED]
 - v. Even disregarding the flaws in Dr. Putnam's excess sales analysis [REDACTED]
- b. Dr. Putnam has not established a causal relationship (i.e., nexus) between CAB's claimed "excess sales" and the '291 Patent.
 - i. Dr. Putnam admitted that it is impossible to separate the impact of the '291 and '551 Patents on CAB's sales, further weakening his argument that the '291 Patent contributed significantly to CAB's commercial success.
 - ii. Dr. Putnam failed to consider CAB's other patents covering methods and designs related to the components of both the Standard System and Integrated System. Consequently, he did not rule out the possibility that these patents may have contributed to CAB's sales.
 - iii. Dr. Putnam's 50 percent division of CAB's claimed excess sales between the '291 and '551 Patents is arbitrary and unsupported.

- c. Dr. Putnam’s discussion of cost savings attributed to the ’291 Patent is overstated and misleading.
- i. Dr. Putnam did not rule out that CAB’s other patents contributed to the claimed cost savings.
 - ii. [REDACTED]
 - iii. [REDACTED]
 - iv. Dr. Putnam’s assessment of cost savings from CAB’s Integrated System is overstated and misleading when viewed on a per-project basis.

III. RELEVANT CASE BACKGROUND

A. CAB

11. CAB, founded in 1927, is a nonprofit organization manufacturing hooks, hangers, cable rings, and saddles, for mining, solar, utilities, and communication industries, among others.⁶ CAB is headquartered and has one of its plants in Johnstown, Pennsylvania, with its second plant located in Ebensburg, Pennsylvania.⁷ CAB employs over 300 individuals with disabilities who are overseen by about 55 professional staff members.⁸
12. CAB has been manufacturing above-ground cable management products for the electrical industry for 45 years.⁹ CAB introduced above-ground cable management products for use in utility-scale solar installations in the 2014 timeframe.¹⁰ CAB offers a “patented cabling system” under its “Solar Cable Management” business to be used in for all types of wiring

⁶ “CAB Products,” CAB. (<https://www.cabproducts.com/>, viewed on September 9, 2024.). *See also* “Privacy Policy,” CAB. (<https://www.cabproducts.com/privacy-policy/>, viewed on September 9, 2024.) *See also* Cambria County Association for the Blind & Handicapped, EX1037 in IPR2024-00178, p. 3.

⁷ “Privacy Policy,” CAB. (<https://www.cabproducts.com/privacy-policy/>, viewed on September 9, 2024.)

⁸ Cambria County Association for the Blind & Handicapped, EX1037 in IPR2024-00178, p. 7.

⁹ “CAB Solar Cable Management,” CAB. (<https://www.cabproducts.com/solar/>, viewed on September 9, 2024.)

¹⁰ Declaration of Allen Garrett Smith in Support of Patent Owner’s Response dated August 4, 2024, EX2006 in IPR2024-00178 (“Smith ’291 Declaration”), p. 2.

in utility scale, ground-mount solar power plants.¹¹ CAB offers a catalog of individual components used for above-ground cable management that customers can select from, including [REDACTED]

[REDACTED].¹³ CAB also offers an integrated grounding option, which includes custom engineered messenger wire, clamps, and mid-pier brackets that eliminate the need for a separate grounding conductor.¹⁴ This integrated grounding option was introduced in the 2017 timeframe.¹⁵

B. AWM

13. AWM is a Delaware limited liability company with headquarters in Bedminster, New Jersey, which focuses on designing and supplying cable management systems for utility-scale solar power plants.¹⁶ AWM has successfully deployed more than 10 Gigawatts (GW) of combined solar cable management systems across several dozen projects in the United States and Canada.¹⁷
14. AWM's solar products include Arden messenger cable hangers for above-ground wire management, Bonsai module cable hangers for string cabling, and the Solar LOTO safety

¹¹ "CAB Solar Cable Management," CAB. (<https://www.cabproducts.com/solar/>, viewed on September 9, 2024.)

¹² Mid-pier and end-pier kids consist of brackets, clamps, and other associated hardware and equipment. (Smith '291 Declaration, p. 4.)

¹³ "CAB Solar Cable Management," CAB. (<https://www.cabproducts.com/solar/>, viewed on September 9, 2024.) *See also* CAB's Sales Data, 2014-2024, EX2046 in IPR2024-00178.

¹⁴ "CAB Solar Cable Management," CAB. (<https://www.cabproducts.com/solar/>, viewed on September 9, 2024.)

¹⁵ Smith '291 Declaration, p. 3.

¹⁶ "About AWM," AWM. (<https://affordablewm.com/about-us/>, viewed on September 9, 2024.) *See also* "Who We Serve," AWM. (<https://affordablewm.com/partners/>, viewed on September 9, 2024.) *See also* "Affordable Wire Management," Global FinReg. (<https://globalfinreg.com/en/lookup/AFFORDABLE-WIRE-MANAGEMENT-LLC/United-States/549300SLY7O0QPQPHG63>, viewed on September 9, 2024.)

¹⁷ "Experience," AWM. (<https://affordablewm.com/experience/>, viewed on September 9, 2024.)

device which minimizes electric shock risk during energization and maintenance.¹⁸ AWM also offers hardware including the HELIOS beam rod, which improves upon AWM's earlier hex rod while delivering significant technical advantages to installers, and the PHOTON toolkit, which reduces labor costs during messenger cable installment and decreases cable sag.¹⁹

C. The '291 Patent

15. The '291 Patent, entitled "Locking Cable Hanger and Method of Using," was filed on June 16, 2021, issued on May 31, 2022, and expires on November 29, 2034.²⁰ The '291 Patent lists Allen Garrett Smith, Frank Edward Hodge, David James Prasko, and Timothy Joseph Wedding as the named inventors.²¹ The patent was assigned to CAB upon issuance.²² The '291 Patent claims priority from U.S. Patent Application No. 14/556,117, filed on November 29, 2014, which issued as U.S. Patent No. 9,722,405.²³
16. The abstract of the '291 Patent is reproduced below:²⁴
- A cable hanger for the solar, mining, and electrical industry for use in supporting a plurality of conductive cables from a messenger wire.
17. I understand that CAB contends through Dr. Edward Kern, its technical expert with respect to the '291 Patent, that the claims of the '291 Patent are directed to systems and methods

¹⁸ "Solutions," AWM. (<https://affordablewm.com/solutions/>, viewed on September 9, 2024.)

¹⁹ "Solutions," AWM. (<https://affordablewm.com/solutions/>, viewed on September 9, 2024.) *See also* "Affordable Wire Management Launches New Hardware Offerings to Boost Construction Productivity," AWM. (<https://affordablewm.com/affordable-wire-management-launches-new-hardware-offerings-to-boost-construction-productivity/>, viewed on September 11, 2024.)

²⁰ U.S. Patent No. 11,349,291.

²¹ U.S. Patent No. 11,349,291.

²² U.S. Patent No. 11,349,291. *See also* "Assignment abstract of title for Application 17349447," USPTO. (<https://assignment.uspto.gov/patent/index.html#/patent/search/resultAbstract?id=11349291&type=patNum>, viewed on September 9, 2024.)

²³ U.S. Patent No. 11,349,291.

²⁴ U.S. Patent No. 11,349,291.

of organizing electrical cables extending from solar panels.²⁵ Claim 1 of the '291 Patent states the following:²⁶

A system for organizing a plurality of electrical cables extending from a plurality of solar panels, the system comprising: a messenger wire structured to be supported a distance above the ground; and plurality of cable hangers structured to be disposed along, and suspended from, the messenger wire, each cable hanger having a plurality of cable carrying surfaces, each cable carrying surface being structured to support at least one electrical cable of the plurality of electrical cables, wherein adjacent cable carrying surfaces of the plurality of cable carrying surfaces are separated by a cable carrier divider.

18. On November 10, 2023, AWM requested *inter partes* review of claims 1 – 10, 14 – 22, and 24 – 25 of the '291 Patent,²⁷ which was instituted on May 13, 2024.²⁸

D. The '551 Patent

19. The '551 Patent entitled “Grounding System,” was filed on October 5, 2017, issued on January 8, 2019, and expires on October 5, 2037.²⁹ The '551 Patent lists Allen Garrett Smith, Gregory Stephen Platt, and Timonthy Joesph Wedding as the named inventors.³⁰ The patent was assigned to CAB upon issuance.³¹ The '551 Patent was filed as U.S. Patent Application No. 15/725,668, on October 5, 2017, and does not claim priority to any earlier-filed patent applications.³²
20. The abstract of the '551 Patent is reproduced below:³³

²⁵ Declaration of Edward C. Kern, Jr., Ph.D. in Support of Patent Owner’s Response dated July 25, 2024, EX2038 in IPR2024-00178 (“Kern July 2024 Declaration”), p. 30.

²⁶ U.S. Patent No. 11,349,291.

²⁷ Petition for Inter Partes Review IPR 2024-00178 dated November 10, 2023, p. 1.

²⁸ Decision Granting Institution of Inter Partes Review IRP 2024-00178 dated April 24, 2024, p. 1.

²⁹ U.S. Patent No. 10,177,551.

³⁰ U.S. Patent No. 10,177,551.

³¹ U.S. Patent No. 10,177,551.

³² U.S. Patent No. 10,177,551.

³³ U.S. Patent No. 10,177,551.

A grounding system, structured to ground a number of cables supported by a support assembly, includes a multi-function line assembly and a number of conductive mounting assemblies. Each conductive mounting assembly is structured to the multi-function line and to a conductive pile.

21. I understand that CAB contends (through Dr. Phinney, its technical expert with respect to the '551 Patent) that the claims for the '551 Patent relate to a grounding system having a “multifunction line” that serves the dual purpose of (a) physically supporting cable hangers that in turn support electric cables and (b) serving as an equipment grounding conductor for the system.³⁴ Claim 1 of the '551 Patent states the following:³⁵

A grounding system structured to ground a number of cables supported by a support assembly, said support assembly including a plurality of spaced, conductive piles, said grounding system comprising: a multi-function line assembly including a multi-function line; a number of conductive mounting assemblies, each said conductive mounting assembly structured to be coupled to said multi-function line and to a conductive pile; and wherein said multi-function line assembly is coupled to, and in electrical communication with, said number of conductive mounting assemblies.

22. On November 3, 2023, AWM filed petition for *inter partes* review for claims 1 – 19 of the '551 Patent, which was instituted on April 24, 2024.³⁶

E. Solar Power Industry

23. Solar power is renewable energy which harnesses and converts the sun’s energy into usable electricity.³⁷ Solar power is generally produced using either photovoltaic technology (“PV”) or solar thermal technology.³⁸ Solar thermal technology is comprised of flat or

³⁴ Declaration of Joshua Phinney, Ph.D. in Support of Patent Owner’s Response dated August 7, 2024, EX2064 in IPR2024-00139 (“Phinney Declaration”), p. 24.

³⁵ U.S. Patent No. 10,177,551.

³⁶ Petition for Inter Partes Review IPR 2004-00139 dated November 3, 2023. *See also* Decision Granting Institution of Inter Partes Review IRP 2024-00178 dated April 24, 2024.

³⁷ “Solar Power 101: What is Solar Energy?” EnergySage. (<https://www.energysage.com/about-clean-energy/solar/>, viewed on September 12, 2024.)

³⁸ “What is U.S. electricity generation by energy source?” U.S. Energy Information Administration. (<https://www.eia.gov/tools/faqs/faq.php?id=427&t=3>, viewed on September 10, 2024.)

parabolic collectors concentrating sunlight primarily using mirrors and lenses; the concentrated sunlight is then used as a heat source for applications such as conventional steam-based power plants.³⁹ By contrast, PV technology uses solar cells to absorb energy from sunlight and convert it into electrical energy through semiconducting materials.⁴⁰ Solar cells are connected using wire cables to form larger power-generating units known as solar panels.⁴¹ PV systems generate electricity, while solar thermal systems generate heat that can be used to produce electricity.⁴² PV is used in both residential and commercial settings, whereas solar thermal technology is more common in industrial settings.⁴³

24. The solar PV industry is comprised of three sectors: utility-scale, commercial and industrial (C&I), and residential.⁴⁴ Utility-scale projects produce the largest amount of energy, 5 – 10 megawatts (5,000 to 10,000 kilowatts) or more, and solely supply electricity for distribution through the utility system.⁴⁵ C&I projects supply power to the commercial

³⁹ “Solar Thermal Technologies,” Energypedia. (https://energypedia.info/wiki/Solar_Thermal_Technologies, viewed on September 12, 2024.)

⁴⁰ “Photovoltaics, Solar Energy Technologies Office,” Office of Energy Efficiency & Renewable Energy. (<https://www.energy.gov/eere/solar/photovoltaics>, viewed on September 9, 2024.)

⁴¹ “Photovoltaics, Solar Energy Technologies Office,” Office of Energy Efficiency & Renewable Energy. (<https://www.energy.gov/eere/solar/photovoltaics>, viewed on September 9, 2024.)

⁴² “Solar PV vs Solar Thermal: What’s the Difference?” Solar Tech Advisor. (<https://solartechadvisor.com/pv-solar-thermal/>, viewed on September 13, 2024.)

⁴³ “Solar PV vs Solar Thermal: What’s the Difference?” Solar Tech Advisor. (<https://solartechadvisor.com/pv-solar-thermal/>, viewed on September 13, 2024.)

⁴⁴ “Solar Project Types: Utility-Scale, Commercial, Residential,” Targray. (<https://www.targray.com/media/articles/solar-project-types>, viewed on September 9, 2024.)

⁴⁵ “Solar Project Types: Utility-Scale, Commercial, Residential,” Targray. (<https://www.targray.com/media/articles/solar-project-types>, viewed on September 9, 2024.) *See also* Deposition of William Brooks (“Brooks Deposition”), pp. 18 – 20 (“Q. What does the term ‘utility scale solar’ refer to? A. It would be synonymous with large-scale solar. And as the name implies, would relate to larger systems that typically are connected through a substation into the utility distribution and transmission network. And there actually is a kind of a – an elongated definition of large-scale plants [...] [a]nd it actually calls out five megawatts or larger connected directly into the distribution or transmission system to utility. And it doesn’t supply any loads like buildings or

entity that installs the system, such as corporate organizations and industrial plants, usually around 1 – 2 megawatts (1,000 to 2,000 kilowatts),⁴⁶ and residential projects generally refer to rooftop solar power generation, producing from 5 to 20 kilowatts for homeowners.⁴⁷

25. In 2023, the United States generated approximately 4,178 billion kilowatt hours of electricity at utility-scale facilities, with approximately 3.9 percent of that electricity being generated by solar power.⁴⁸ That same year, the vast majority (98 percent) of utility-scale solar power was generated by PV technologies.⁴⁹ Also in 2023, the United States installed capacity of 26.3 gigawatts of PV power with 18.4 gigawatts (70 percent) coming from utility-scale projects, 6.6 gigawatt (25 percent) from residential, and 1.3 gigawatts (5 percent) from C&I.⁵⁰ PV represented approximately 54 percent of new U.S. electric generation capacity in 2023, compared to 6 percent in 2010.⁵¹

houses or anything like that, prior to going into the utility system, so it's a dedicated system. Whereas a commercial industrial system often would be installed in such a way that it would connect its power into the service for that commercial entity; and therefore, uses some of the power on site for loads. So utility scale doesn't do that. It just essentially produces the power directly into the utility system.”).

⁴⁶ “Solar Project Types: Utility-Scale, Commercial, Residential,” Targray. (<https://www.targray.com/media/articles/solar-project-types>, viewed on September 9, 2024.) *See also* Brooks Deposition, pp. 18 – 20.

⁴⁷ “Solar Project Types: Utility-Scale, Commercial, Residential,” Targray. (<https://www.targray.com/media/articles/solar-project-types>, viewed on September 9, 2024.)

⁴⁸ “What is U.S. electricity generation by energy source?” U.S. Energy Information Administration. (<https://www.eia.gov/tools/faqs/faq.php?id=427&t=3>, viewed on September 10, 2024.)

⁴⁹ For example, in 2023, solar generated power produced 165 kilowatt hours of energy with 163 (98 percent) coming from PV technology and 3 kilowatt hours (2 percent) coming from solar thermal technologies. *See* “What is U.S. electricity generation by energy source?” U.S. Energy Information Administration. (<https://www.eia.gov/tools/faqs/faq.php?id=427&t=3>, viewed on September 10, 2024.)

⁵⁰ “Spring 2024 Solar Industry Update,” National Renewable Energy Laboratory. (<https://www.nrel.gov/docs/fy24osti/90042.pdf>, viewed on September 9, 2024).

⁵¹ “Spring 2024 Solar Industry Update,” National Renewable Energy Laboratory. (<https://www.nrel.gov/docs/fy24osti/90042.pdf>, viewed on September 9, 2024).

26. PV systems are made up of solar cells, which convert sunlight to electrical charges and connect to form larger solar panels or solar modules, and a number of other support components that fall into the category of “Balance of System” products.⁵² Balance of System (“BOS”) products include batteries, inverters, wires, support structures, fuses, and any other components besides solar modules that are part of the PV system.⁵³ CAB’s products are all considered Balance of System products. Balance of System products make up approximately 10% to 50% of purchasing and installation costs for PV systems.⁵⁴

F. CAB’s Above-Ground Cable Management Products

27. As discussed previously, CAB offers above-ground cable management products for use in utility-scale solar power plant installations. CAB’s offering includes [REDACTED]
[REDACTED]
[REDACTED].⁵⁵ CAB’s sales [REDACTED]
[REDACTED] are summarized in **Exhibit 1**. According to Allen Garrett Smith, co-inventor of the ’291 and ’551 Patents and part-time Senior Project Manager at CAB, CAB sells its products direct to customers and through distributors.⁵⁶ Based on CAB’s website, sales data produced in this case, and other documentary evidence

⁵² “Photovoltaics: Basic Design Principles and Components,” Department of Energy. (<https://www.nrel.gov/docs/legosti/fy97/6981.pdf>, viewed on October 11, 2024.) *See also* “Solar Cell, Module, Panel and Array: What’s the Difference?” CNET. (<https://www.cnet.com/home/energy-and-utilities/solar-cell-module-panel-and-array-whats-the-difference/>, viewed on October 11, 2024.)

⁵³ “Photovoltaics: Basic Design Principles and Components,” Department of Energy. (<https://www.nrel.gov/docs/legosti/fy97/6981.pdf>, viewed on October 11, 2024.) Mr. Smith testified that balance of system generally refers to products for solar outside of the solar panels and the support structure (the piles and framework that the panels sit in). (Deposition of Allen Garrett Smith taken September 25, 2024 (“Smith Deposition”), p. 21.)

⁵⁴ “Balance of Solar PV Systems (BOS),” Greentech Renewables. (<https://www.greentechrenewables.com/article/balance-solar-pv-systems-bos>, viewed on October 11, 2024.)

⁵⁵ “CAB Solar Cable Management,” CAB. (<https://www.cabproducts.com/solar/>, viewed on September 9, 2024.) *See also* CAB’s Sales Data, 2014-2024, EX2046 in IPR2024-00178.

⁵⁶ Smith Deposition, p. 139.

[REDACTED]

[REDACTED]⁵⁷

28. In the current matter, CAB claims its sales can be divided between two classes of above-ground cable management systems: a “Standard System” and an “Integrated System.”⁵⁸ I describe these systems below.

- a. Standard System. According to CAB’s technical expert, Dr. Kern, CAB’s Standard System is sold for solar power plant installations to support and separate various electrical cables within a PV array.⁵⁹ CAB’s Standard System includes mid-pier kits, end-pier kits, galvanized steel messenger wire, and cable hangers of various configurations.⁶⁰ I understand that the messenger wire is connected to and supported by piles; however, CAB does not sell the piles.⁶¹ The Standard System was introduced in the 2014 timeframe.⁶² CAB contends that the Standard System created for the first time in the solar industry “an above-ground cable management system using messenger wire-supported cable hangers to support and separate the various kinds of electrical cables within a solar installation array, including, specifically, DC current carrying cables, AC current carrying cables, and data/communication cables.”⁶³ CAB contends through Dr. Kern, its technical expert with respect to the ’291 Patent, that the Standard System is coextensive with at least independent claims 1 and 6 of the ’291 Patent.⁶⁴ CAB’s standard system is depicted in **Figure 1**.

⁵⁷ “CAB Solar Cable Management,” CAB. (<https://www.cabproducts.com/solar/>, viewed on September 9, 2024.) See also [REDACTED] EX2046 in IPR2024-00178. See also [REDACTED] EX2042, EX2050, EX2051, EX2052, EX2053, and EX2054 in IPR2024-00178.

⁵⁸ Putnam ’291 Declaration, pp. 5 and 18.

⁵⁹ Kern July 2024 Declaration, p. 70.

⁶⁰ Kern July 2024 Declaration, p. 70.

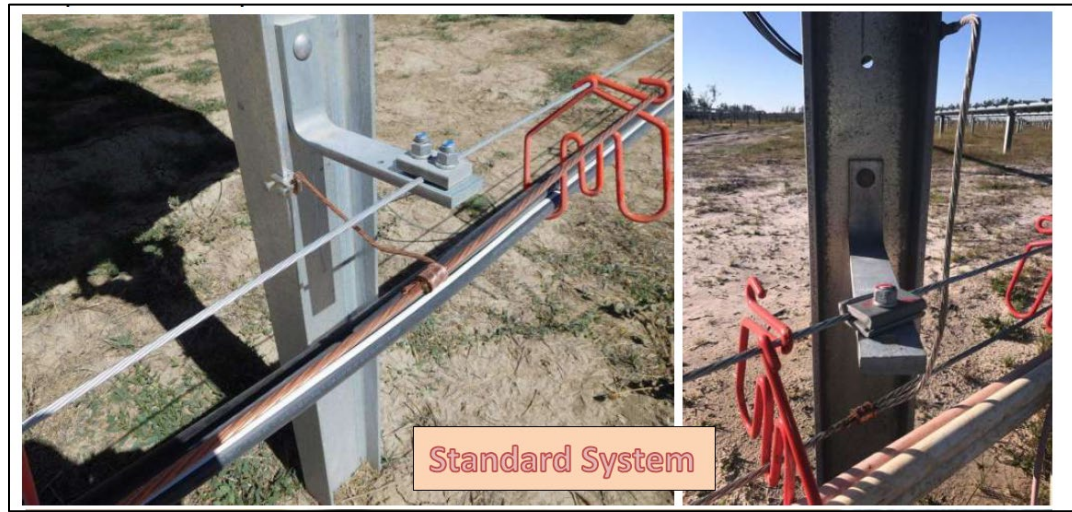
⁶¹ Smith Deposition, pp. 64 – 65 and 107.

⁶² Smith ’291 Declaration, p. 2.

⁶³ Smith ’291 Declaration, p. 3.

⁶⁴ Kern July 2024 Declaration, p. 70.

Figure 1
CAB's Standard System⁶⁵



- b. **Integrated System.** CAB contends that its Integrated System (or integrated grounding system) created for the first time “a grounding system that uses a messenger wire that can act as a support structure for cable hangers and current wires, and that can also act as an equipment grounding conductor and grounding electrode conductor for grounding the equipment components of the system in the event of a fault.”⁶⁶ CAB further contends that its Integrated System eliminated the need for a separate grounding conduct and grounding splices at each pile, which were required with its Standard System.⁶⁷ According to CAB’s technical expert with respect to the ’551 Patent, Dr. Phinney, CAB’s Integrated System includes a custom manufactured copper-clad messenger wire, mid-pier kits that are rated for grounding and bonding, end-pier kits, and cable hangers of various configurations.⁶⁸ CAB sold its first Integrated System in December 2017.⁶⁹ [REDACTED]⁷⁰ CAB contends through Dr. Phinney, its technical expert with respect to the ’551 Patent, that the Integrated System is coextensive with at least independent claim 1 of the ’551 Patent.⁷¹ CAB’s Integrated System is depicted in **Figure 2**.

⁶⁵ CAB Solar Cable Management Installation Guide, EX2041 in IPR2024-00178, p. 2.

⁶⁶ Smith ’291 Declaration, p. 3.

⁶⁷ Smith ’291 Declaration, pp. 3 – 4 and 28.

⁶⁸ Phinney Declaration, p. 110.

⁶⁹ Smith ’291 Declaration, p. 31.

⁷⁰ Smith ’291 Declaration, p. 31.

⁷¹ Phinney Declaration, p. 111.

Figure 2
CAB's Integrated Grounding System⁷²



IV. LEGAL FRAMEWORK RELATING TO COMMERCIAL SUCCESS

29. I understand that the law forbids issuance of a patent when differences between the claimed invention and the prior art are such that the claimed invention would have been obvious to a person having ordinary skill in the art.⁷³ It is my understanding that in conducting this obviousness analysis, the law requires consideration of the following:⁷⁴
- a. the level of ordinary skill in the pertinent art;
 - b. the scope and content of the relevant prior art;
 - c. the differences between the prior art and the claimed invention; and
 - d. evidence of other considerations (called secondary considerations) that bear on the analysis, including, among others, copying, skepticism of others, failure of others, commercial success, industry praise, unexpected results, licensing, and long felt but unresolved need.

⁷² CAB Solar Cable Management Installation Guide, EX2041 in IPR2024-00178, p. 2.

⁷³ United States Code: Title 35 – Patents, § 103.

⁷⁴ *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17-18 (1966); *Brown & Williamson Tobacco Corp. v. Philip Morris Inc.*, 229 F.3d 1120, 1129 (Fed. Cir. 2000); *In re Rouffet*, 149 F.3d 1350, 1355 (Fed. Cir. 1998).

30. With respect to commercial success as a secondary consideration that a patent owner may attempt to rely upon to support non-obviousness of a patented invention, the Federal Circuit has determined that “the law deems evidence of (1) commercial success, and (2) some causal relation or ‘nexus’ between an invention and commercial success of a product embodying that invention, probative of whether an invention was non-obvious.”⁷⁵ I further understand that, in evaluating commercial success, courts have traditionally looked for evidence of (a) significant sales and market share or profit of the product that embodies the patented invention in the relevant marketplace (“marketplace success”) and (b) a causal connection (or nexus) between that marketplace success and the benefits, merits, and advantages made possible by the relevant claims of the Patents-in-Suit.⁷⁶

V. OVERVIEW OF THE PUTNAM ’291 DECLARATION

31. Dr. Putnam was retained by counsel for CAB to examine the commercial success of CAB products that he states are “coextensive” with the ’291 Patent and the ’551 Patent, as a factor for secondary considerations supporting the patents’ non-obviousness.⁷⁷ On July 24, 2024, Dr. Putnam submitted a declaration in support of CAB’s response to the *inter partes* review for the ’291 Patent.⁷⁸ Dr. Putnam concluded that the ’291 and ’551 Patents

⁷⁵ *Merck & Co., Inc. v. Teva Pharmaceuticals USA*, 395 F.3d 1364, 1376 (Fed. Cir. 2005) paraphrasing *Graham v. John Deere Co.*, 383 U.S. 1, 17 – 18 (1966).

⁷⁶ See, e.g., *In re DBC*, 545 F.3d 1373, 1384 (Fed. Cir. 2008.) (“the proponent must offer proof that the sales were a direct result of the unique characteristics of the claimed invention—as opposed to other economic and commercial factors unrelated to the quality of the patented subject matter.”) (Internal citations and quotations omitted.) See, e.g., *In re Applied Materials, Inc.*, 692 F.3d 1289, 1300-01 (Fed. Cir. 2012) (“the more probative evidence of commercial success relates to whether the sales represent ‘a substantial quantity in th[e] market.’ ... This court has noted in the past that evidence related solely to the number of units sold provides a very weak showing of commercial success, if any”).

⁷⁷ Putnam ’291 Declaration, p. 3.

⁷⁸ Putnam ’291 Declaration, p. 3. Dr. Putnam also submitted an expert declaration for the ’551 Patent on August 7, 2024. In both of his declarations, Dr. Putnam addressed both the ’291 and ’551 Patents.

“each caused CAB’s substantial commercial success, which strongly supports CAB’s position that each of the patents was not obvious at the time it was invented.”⁷⁹

32. Dr. Putnam’s analysis is based on the following inputs and assumptions.

- a. The ’291 Patent. According to Dr. Putnam, “[t]he ’291 patent covers an above-ground cable management system that includes an aerial messenger wire with cable hangers suspended from it. CAB began selling products that embody the ’291 patent in 2014.”⁸⁰ Relying on Dr. Kern, Dr. Putnam assumed that CAB’s Standard System is coextensive with the inventions claimed in the ’291 Patent.⁸¹ Dr. Putnam also assumed that every CAB system (i.e., the Standard System and Integrated System) embodies the claims of the ’291 Patent.⁸²
- b. The ’551 Patent. According to Dr. Putnam, “[t]he ’551 patent covers an integrated grounding system with the messenger wire serving to both support the cable hangers and electrical cables, as well as the grounding conductor for the system, which eliminates the need for installing a separate grounding conductor adjacent to the messenger wire and further installing jumper splices between the separate grounding conductor and the solar panel piles (as was done in connection with CAB’s standard system). CAB began selling products that embody the ’551 patent in 2018.”⁸³ Relying on Dr. Phinney, Dr. Putnam assumed that CAB’s Integrated System is coextensive with the ’551 Patent.⁸⁴
- c. Advantages of CAB’s Inventions. According to Dr. Putnam, the system claimed by the ’291 Patent introduced significant cost savings and efficiency improvements over prior solar cable management alternatives, such as buried power transmission cables, which require significant labor costs for installation, maintenance, and repair.⁸⁵ Dr. Putnam also claims that the system claimed by the ’291 Patent provides advantages relative to other above-ground systems on the market, such as cable trays.⁸⁶ With respect to CAB’s Integrated System, Dr. Putnam stated that because its messenger wire acts as a grounding conductor, the integrated system does not require separate grounding conductors, saving material and labor costs.⁸⁷ Dr. Putnam claims that the

⁷⁹ Putnam ’291 Declaration, pp. 41 – 42.

⁸⁰ Putnam ’291 Declaration, p. 7.

⁸¹ Putnam ’291 Declaration, pp. 5 and 19.

⁸² Putnam ’291 Declaration, p. 37.

⁸³ Putnam ’291 Declaration, pp. 7 – 8.

⁸⁴ Putnam ’291 Declaration, pp. 5 and 19.

⁸⁵ Putnam ’291 Declaration, p. 20.

⁸⁶ Putnam ’291 Declaration, pp. 20 – 21.

⁸⁷ Putnam ’291 Declaration, p. 21.

‘cost and other advantages of the ’291 and ’551 Patent inventions over trenching and cable trays form an essential part of CAB’s pitch to prospective customers.’”⁸⁸

33. Dr. Putnam’s evaluation of commercial success is based on a two-part analysis. First, Dr. Putnam calculated what he called CAB’s “excess sales” (i.e., sales over and above what would have been predicted by industry growth).⁸⁹ Second, Dr. Putnam claimed to establish a nexus between his claimed “excess sales” and the ’291 and ’551 Patents.⁹⁰

A. Claimed Excess Sales

34. To evaluate whether CAB’s Standard System and Integrated System are commercially successful, Dr. Putnam sought to determine whether CAB’s sales growth⁹¹ can be explained by industry growth or whether CAB has exhibited “excess growth” relative to the industry baseline.⁹² To answer this question, Dr. Putnam calculated what he called “excess sales” by comparing the growth of CAB’s sales (in dollars) to the growth of U.S. net new installed utility-scale photovoltaic capacity (in gigawatts) between 2015 and 2023.⁹³
35. Dr. Putnam first compared the growth rates between actual CAB sales and actual U.S. net new PV capacity. Starting from a claimed “common baseline” in 2015, Dr. Putnam concluded that CAB’s sales grew at a much higher rate than PV capacity.⁹⁴ Specifically,

⁸⁸ Putnam ’291 Declaration, p. 22.

⁸⁹ Putnam ’291 Declaration, pp. 31 – 33.

⁹⁰ Putnam ’291 Declaration, p. 35. I note that although the Putnam ’291 Declaration is specific to the ’291 Patent, as will be discussed in more detail later in my declaration, Dr. Putnam did not “decompose” excess sales as between the ’291 and ’551 Patents.

⁹¹ [REDACTED]

⁹² Putnam ’291 Declaration, p. 31.

⁹³ Dr. Putnam relied on data for the net new installed PV capacity in the “utility-scale” segment from the National Renewable Energy Laboratory (“NREL”). (Putnam ’291 Declaration, pp. 31 – 32.)

⁹⁴ Putnam ’291 Declaration, pp. 32 and 34.

Dr. Putnam calculated that annual net new PV capacity increased 24.2 percent per year from 2015 to 2023 (which Dr. Putnam also refers to as the “industry growth rate”),⁹⁵ and for the same period, CAB’s annual sales increased by a compound annual growth rate of more than [REDACTED] percent.⁹⁶

36. Dr. Putnam then claimed to translate the comparison into “predicted CAB sales” by projecting CAB’s sales under two assumptions: (a) “CAB sales growth at the observed average annual rate ([REDACTED] per year)” and (b) “Industry sales growth at the industry benchmark rate (24.2% per year).”⁹⁷ According to Dr. Putnam, CAB’s “excess sales” can be calculated as the difference between the two “growth curves” implied by these projections.⁹⁸ Dr. Putnam concluded that “CAB’s excess sales are predicted to be more than \$ [REDACTED] over the period 2015 – 2023” and claimed these excess sales are “unmistakable and unambiguous evidence of the commercial success of CAB’s standard and integrated systems.”⁹⁹

B. Nexus of Claimed Excess Sales to the '291 and '551 Patents

37. To tie the claimed commercial success of CAB’s Standard System and Integrated System to the '291 and '551 Patents, Dr. Putnam adopted “a three-step approach” of (a) examining the underlying reasons for CAB’s sales, (b) investigating possible alternative explanations

⁹⁵ From 3.3 gigawatts (GW) in 2015 to 18.4 GW in 2023. (Putnam '291 Declaration, p. 32 and Appendix 2.1.)

⁹⁶ [REDACTED]

⁹⁷ Putnam '291 Declaration, p. 33 and Appendix 2.1

⁹⁸ Putnam '291 Declaration, p. 33 and Appendix 2.1

⁹⁹ Putnam '291 Declaration, p. 34 – 35.

for either supplier or customer decisions, and (c) determining whether the causes of CAB's excess sales can be decomposed as between the '291 and '551 Patents.¹⁰⁰

- a. Examining Underlying Reasons for CAB's Sales. According to Dr. Putnam, the "economic fundamentals that underlie CAB's decisions to offer its standard and integrated systems are not hard to identify" and include (i) reduced customer installation and maintenance costs and time and (ii) superior performance (e.g., flexibility and reduced environmental impact), "all without reducing quality or increasing risk."¹⁰¹ Dr. Putnam stated that "such productivity improvements usually cause a significant segment of customers to switch from the old way of doing things to the new way" and concluded that "[t]hat is the case here."¹⁰²
- b. Investigating Possible Alternative Explanations. Dr. Putnam also claimed that "there could be other reasons for CAB's success" but "the record is void of any such benefits, either advertised by CAB or demanded by its customers."¹⁰³ According to Dr. Putnam, the benefits of the CAB systems are "directly traceable" to the inventions claimed in the '291 and '551 Patents.¹⁰⁴ Dr. Putnam concluded that "[o]n the record evidence, there is simply no reason to believe that any unclaimed 'hidden factor' drove demand for CAB's systems."¹⁰⁵ Hence, Dr. Putnam determined that "the excess sales of the CAB standard and integrated systems were caused by the claimed inventions."¹⁰⁶
- c. Decomposing Causation Between the '291 and '551 Patents. Dr. Putnam "investigated whether the claimed excess sales made possible by the '291 and '551 patents could be further decomposed into separate causes and quantified."¹⁰⁷ Dr. Putnam concluded that the claimed excess sales could not be decomposed between the '291 and '551 Patents for the following reasons.¹⁰⁸
 - i. According to Dr. Putnam, the patents are economic complements, consumed together (like peanut butter and jelly), and an increase in demand for one complement increases demand for the other.¹⁰⁹

¹⁰⁰ Putnam '291 Declaration, p. 35.

¹⁰¹ Putnam '291 Declaration, p. 35.

¹⁰² Putnam '291 Declaration, p. 35.

¹⁰³ Putnam '291 Declaration, p. 36.

¹⁰⁴ Putnam '291 Declaration, p. 36.

¹⁰⁵ Putnam '291 Declaration, p. 36.

¹⁰⁶ Putnam '291 Declaration, p. 36.

¹⁰⁷ Putnam '291 Declaration, p. 36.

¹⁰⁸ Putnam '291 Declaration, p. 36.

¹⁰⁹ Putnam '291 Declaration, p. 37.

- ii. Using an analogy in which Dr. Putnam likened the '291 Patent to peanut butter and the '551 Patent to jelly, Dr. Putnam claimed that complementary combinations (such as the '291 and '551 Patents) may substitute for each other (much like a peanut butter and jelly sandwich may substitute for a peanut butter sandwich). According to Dr. Putnam, the availability of a complementary good has substitutionary effects (i.e., substituting away from peanut butter sandwiches to peanut butter and jelly sandwiches, if offered, and thus reducing the demand for peanut butter sandwiches) and market expansion effects (i.e., substituting away from a tuna sandwich to a peanut butter and jelly sandwich, if offered, and thus increasing the demand for peanut butter and jelly). Dr. Putnam claimed that because every CAB system embodies the claims of the '291 patent (the “peanut butter”) and the integrated system also embodies the '551 patent (the “jelly”), it is impossible to know how many people substituted from the standard system ('291-only) to the integrated system ('291 + '551), and how much market expansion the integrated system brought.¹¹⁰ Dr. Putnam concluded that “[i]t is impossible to allocate the gains from those additional sales between the '291 patent and the '551 patent because the '551 patent builds on, and renders more valuable, the inventions claimed in the '291 patent.”¹¹¹
- iii. According to Dr. Putnam, “[f]or strict symmetric complements, one can assign a fraction of the total value (50%) to each member of the pair.”¹¹² For illustrative purposes, Dr. Putnam assumed a 50 percent division of CAB’s total gains could be attributable to each patent, stating that from a statistical point of view, non-identification of the true share of sales to each patent is problematic, but substantively, such indeterminacy is irrelevant as his conclusion, that “[REDACTED]” remains unaltered.¹¹³

38. Based on the above, Dr. Putnam concluded that “the '291 patent and '551 patent each caused CAB’s substantial commercial success, which strongly supports CAB’s position that each of the patents was not obvious at the time it was invented.”¹¹⁴

¹¹⁰ Putnam '291 Declaration, p. 37 – 38.

¹¹¹ Putnam '291 Declaration, p. 38.

¹¹² Putnam '291 Declaration, p. 39.

¹¹³ Putnam '291 Declaration, pp. 40 – 41.

¹¹⁴ Putnam '291 Declaration, pp. 41 – 42.

VI. DR. PUTNAM HAS FAILED TO DEMONSTRATE COMMERCIAL SUCCESS OF CAB PRODUCTS AND THE NEXUS TO THE '291 PATENT

39. As discussed in **Section IV**, establishing commercial success is generally a two-step process of first, establishing marketplace success of the product that embodies the patented invention and second, establishing a nexus between that marketplace success and the invention claimed by the patent.¹¹⁵ In attempting to establish the commercial success of the '291 Patent, Dr. Putnam purports to follow this two-step process. Dr. Putnam testified that the “overarching question” to answer is “are each of the '291 and the '551 a substantial cause of CAB’s excess sales and thus of its commercial success.”¹¹⁶ However, Dr. Putnam has failed to demonstrate reliably that (a) CAB’s products have achieved commercial success and (b) the challenged claims of the '291 Patent are a substantial cause of the commercial success, if any.

A. Dr. Putnam’s Evaluation of “Excess Sales” is Flawed and Does Not Establish Commercial Success of CAB Products

40. According to Dr. Putnam, one must evaluate both sides of the market—consumers and suppliers—to establish commercial success of a product.¹¹⁷ On the supply side, Dr. Putnam asserted that commercial success occurs when “a firm supplies products that consumers demand, at a price that at least covers the full cost of production, including a return on invested capital – that is, the firm makes a profit.”¹¹⁸ Dr. Putnam further claimed

¹¹⁵ See, e.g., *In re DBC*, 545 F.3d 1373, 1384 (Fed. Cir. 2008.) (“the proponent must offer proof that the sales were a direct result of the unique characteristics of the claimed invention—as opposed to other economic and commercial factors unrelated to the quality of the patented subject matter.”) (Internal citations and quotations omitted.)

¹¹⁶ Deposition of Dr. Jonathan Putnam taken October 3, 2024 (“Putnam Deposition”), p. 187.

¹¹⁷ Putnam '291 Declaration, p. 16 (“In short, to explain ‘success’ in a market one must consider the decisions made on both sides of the market”). Dr. Putnam testified: “I’m just saying as an economist, a market consists of buyers and sellers. You could imagine scenarios in which examining only one side of the market might mislead you as to whether a product was successful. For example, if you made enormous sales but you were selling them at a loss, then that might not be considered success.” (Putnam Deposition, p. 96.)

¹¹⁸ Putnam '291 Declaration, p. 15.

that “[a]ctual ‘success’ means that the firm chooses a combination of such features, and a price, so that it makes a profit. Widespread sales of that combination, at a profitable price, is necessary (but not sufficient) evidence of commercial success, other things equal.”¹¹⁹

On the demand side, Dr. Putnam asserted that “success means that a substantial number of consumers who are ‘in the market’ select the combination of features found in patented products from among the alternative combinations that they face (including not purchasing at all).”¹²⁰ However, Dr. Putnam does not establish in his declaration that (a) CAB has made *profits* from the sale of its above-ground cable management products that allegedly practice the ’291 Patent or (b) a substantial number of consumers have purchased CAB’s products claimed by the ’291 Patent.

41. Instead of investigating whether CAB’s patented products were purchased by a “substantial number of consumers” or whether CAB realized profits from those sales, Dr. Putnam evaluated a different question in his declaration: “whether CAB’s sales can be explained by industry growth, or whether CAB has exhibited ‘excess growth’ relative to the industry baseline.”¹²¹ Using a flawed benchmarked, Dr. Putnam opined that CAB has achieved sales in excess of the sales it would expect to achieve based solely on “industry growth.”¹²² Dr. Putnam concluded that these “excess sales” are “unmistakable and unambiguous evidence of the commercial success of CAB’s standard and integrated systems.”¹²³

¹¹⁹ Putnam ’291 Declaration, pp. 15 – 16. (Emphasis in original.)

¹²⁰ Putnam ’291 Declaration, p. 16. With regard to the “widespread purchasing of the patented product” which is “necessary but not sufficient evidence of commercial success,” Dr. Putnam testified “you have to come up with a benchmark that makes sense and then evaluate the product sales relative to that benchmark.” According to Dr. Putnam, “you need to figure out what ... a reasonable collection of substitutes is and then you figure out the share of the sales within that market.” (Putnam Deposition, p. 103.)

¹²¹ Putnam ’291 Declaration, p. 31.

¹²² Putnam ’291 Declaration, p. 37.

¹²³ Putnam ’291 Declaration, p. 37.

However, Dr. Putnam's analysis of "excess sales" not only fails to address the necessary conditions for commercial success Dr. Putnam himself outlined in declaration, but also is severely flawed and unreliable. Due to the deficiencies discussed below, Dr. Putnam has not reliably established that CAB products allegedly practicing the '291 Patent have achieved commercial success.

1. Dr. Putnam Failed to Evaluate CAB's Profitability, Let Alone Establish that CAB "Makes a Profit" on Sales of Products Practicing the '291 Patent

42. As introduced above, Dr. Putnam opined in his declaration that profits are "necessary (but not sufficient) evidence of commercial success, other things equal."¹²⁴ Despite this assertion, Dr. Putnam did not discuss, let alone establish, CAB's profitability in his declaration. Dr. Putnam's "excess sales" analysis is based on the growth in CAB's *sales* (i.e., revenues), not profits. Dr. Putnam did not review or evaluate CAB's prices, production costs, invested capital, or profits associated with its above-ground cable management products.¹²⁵ While Dr. Putnam concluded that CAB realized [REDACTED], he did not evaluate whether those revenues were greater than the full cost of production for the sold units.¹²⁶ Therefore, Dr. Putnam did not sufficiently

¹²⁴ Putnam '291 Declaration, pp. 15 – 16. Dr. Putnam testified in deposition that "other things equal" refers to whether other factors would change this profit condition. As an example, he indicated that a startup may realize short-term losses but long-term expected profits. (Putnam Deposition, pp. 127 – 129.) Elsewhere in his deposition, Dr. Putnam testified that the fact pattern in this case is not consistent with this type of "startup" scenario. (Putnam Deposition, pp. 97 – 98.)

¹²⁵ Putnam Deposition, pp. 134 – 135 ("Q: Do you know what CAB's costs of production are? A: I don't ... Q: Dr. Putnam, do you know how much capital CAB invested in its standard system? A: No. Q: Do you know how much capital CAB invested in its integrated grounding system? A: No. Q: Do you know whether CAB's prices for the standard system are above its full cost of production including invested capital? A: Well, that's a definition of profit. So I would say that I – if we assume, as the evidence indicates, that CAB is profitable, then the price is above the cost of production less capital, but I don't know by how much.").

¹²⁶ Putnam '291 Declaration, pp. 15 and 34.

address from the supply-side perspective whether CAB's products are commercially success.

43. Dr. Putnam further elaborated on the importance of evaluating profitability when determining commercial success in his deposition. He confirmed that "commercial success occurs when a firm makes a profit from supplying the product."¹²⁷ When describing one exception to this rule—a firm that is not making profits on its initial sales but expects to in the future—he clarified that CAB's situation does not fit this fact pattern.¹²⁸ In providing an example, Dr. Putnam testified that "if I decided to sell a Mercedes for \$10,000, I would experience rapid sales growth. But I'd be selling it at a loss, and so that would not be considered a commercial success in that market."¹²⁹ Following the same logic, Dr. Putnam cannot conclude that CAB's products were commercially successful solely because CAB realized sales growth or excess sales.
44. Instead of investigating CAB's profits or requesting an income statement,¹³⁰ Dr. Putnam simply assumed that CAB makes a profit on its cable management product sales.¹³¹ Dr.

¹²⁷ Putnam Deposition, p. 97.

¹²⁸ Putnam Deposition, pp. 97 – 98. He referred to the same exception, "where a firm is losing money temporarily in the expectation it will make money in the future," when asked later in his deposition if profits were necessary but not sufficient to establish commercial success. (Putnam Deposition, p. 125.)

¹²⁹ Putnam Deposition, p. 106.

¹³⁰ When asked why he did not ask CAB for its income statement, Dr. Putnam testified that he did not "feel like running up [CAB's] bill." (Putnam Deposition, pp. 133 – 134. (Bracketed text added for clarification.)) Dr. Putnam claimed "I don't need to go out and prove that the sky is blue because the sky is blue." (Putnam Deposition, p. 124.)

¹³¹ Putnam Deposition, p. 135. Throughout his deposition, Dr. Putnam claimed that it was not necessary for him to "go out and prove from an accounting sense" that CAB made profits when selling its cable management products for use in utility-scale PV power plants. Among the reasons he provided for not needing such proof, Dr. Putnam claimed that there was no evidence of unprofitability and other evidence is consistent with CAB making a profit, including that CAB has been "phenomenally successful," CAB is the "only seller of the product in its product category," and CAB's "mission is the long-term sustainability of its workforce." (Putnam Deposition, pp. 129 – 132.) Dr. Putnam's position that he does not need to prove profitability is inconsistent with the fact that the patent owner has the burden of establishing commercial success, for which profits is an important consideration, according

Putnam asserted that “I don’t think there is evidence of unprofitability”¹³² and he did not establish the profitability “given the absence of any indication that it’s anything other than profitable.”¹³³ As demonstrated by his deposition testimony, this assumption is based on speculation.¹³⁴

Q. And you said that as far as you’re aware, CAB is still selling its standard system and integrated system at a profit?

A. Yes.

Q. Did you evaluate profit in rendering your opinions in these matters?

A. Beyond observing that they’re selling at a profit, no.

Q. What evidence do you have that they’re selling at a profit?

A. Well, if they weren’t selling at a profit, they would have to be covering their losses somehow or another, which means they have to be raising capital. That would be -- in addition to being expensive, would be counter to the mission of the organization, which is to be able to hire disabled people to help manufacture the product.

So selling at a loss is unsustainable and inconsistent with that long-term mission. So therefore, they must be selling at a profit that is sufficient to maintain the mission of the organization.

....

Q. So you didn’t perform the analysis?

A. Of the profit margin? No, I did not.¹³⁵

to Dr. Putnam. Dr. Putnam acknowledged that the burden of establishing commercial success was on the patent owner in his deposition. (Putnam Deposition, pp. 132 – 133.)

¹³² Putnam Deposition, p. 130.

¹³³ Putnam Deposition, p. 132.

¹³⁴ Putnam Deposition, pp. 121 – 122. In these pages of his deposition (and others), Dr. Putnam asserted that if CAB was selling its products at a loss, CAB would have to be raising capital to cover its losses, for which he has seen no evidence. (See also Putnam Deposition, pp. 135 – 136.) Dr. Putnam’s claim that CAB would have to raise capital if it were selling its products at a loss is inconsistent with the fact that CAB has operated for a long period of time (founded in 1927) and manufactures many other products that are sold in other industries, including mining, utilities, and communication industries, among others. (See **Section III.A.**) Contrary to Dr. Putnam’s assertion, CAB would not necessarily need to raise capital to cover its losses if a specific product offering (i.e., CAB’s above-ground cable management products sold for use in utility-scale PV power plants) was unsuccessful, given the other business segments it operates.

¹³⁵ Putnam Deposition, p. 135.

45. In sum, Dr. Putnam's assertions and assumptions about CAB's profitability are not supported by actual evidence. His failure to prove CAB sells its products at profit means he failed to establish a necessary (but not sufficient) indicator of commercial success (based on the criteria set in Dr. Putnam's declaration).

2. *Dr. Putnam Failed to Demonstrate that a "Substantial Number of Consumers" in the Market Purchased CAB's Patented Products*

46. Dr. Putnam also failed to evaluate commercial success from the demand-side perspective. While Dr. Putnam claimed that another necessary but not sufficient condition of commercial success was the widespread purchasing of the patented product by a "substantial number of consumers,"¹³⁶ Dr. Putnam did not address whether this was true for CAB's above-ground cable management products. For example, Dr. Putnam did not establish in his declaration the size of the market that CAB competes in or CAB's share of the market, even though he identified market share, along with profits, as important indicators of commercial success.¹³⁷ Instead, Dr. Putnam claimed that the productivity improvements provided by CAB's products caused a "significant segment of customers to switch from the old way of doing things to the new way."¹³⁸

¹³⁶ Putnam '291 Declaration, p. 16.

¹³⁷ Putnam Deposition, pp. 99 – 100 and 136. (Q: ... If a firm is making a profit as opposed to a loss, what else must be true for the product to be considered a commercial success? A: ... Economists look to various indicia. Since firms are set up in order to make profits, then profitability is an important indicator of success. But you also want to look at things like market share, market share growth. And then as you get into the nexus analysis, what's the reason for the market share and the market share growth. So it's kind of a holistic analysis of how the firm is doing and why it's doing that, with profit being the first but not the only inquiry.)"

¹³⁸ Putnam '291 Declaration, p. 35.

47. Dr. Putnam confirmed that market share is a relevant indicator of commercial success during his deposition, while also admitting that the number of sales alone is not sufficient evidence of commercial success:¹³⁹

Q. Is it your opinion that widespread purchasing of a product is necessary evidence of commercial success?

A. Well, again, I think it really depends on the facts because it depends on what you mean by “widespread.”

So I might have very few sales of a very successful product. If I was successful in selling them a rocket to NASA, I might only sell a few rockets. But if I beat out Elon Musk, then that would be evidence of commercial success.

So a dozen rockets could be successful or, you know, a million smartphones could be successful. Or in other contexts, a million smartphones could be not successful.

It just kind of depends on -- you have to scale the number of sales by something that is a plausible reference point. And then your conclusion is, while relative to that reference point, the product is or is not successful.

...

Q. So defining what constitutes widespread sales depends on selecting an appropriate market reference point?

A. In general, yeah. Widespread is a scale-free number. So you need to be able to attach a -- it's not like a majority market share. That tells you something about what the market share is.

Widespread is not a word that has a number attached to it, so you have to do more work in order to make that number economically meaningful.

48. Dr. Putnam also confirmed in his deposition that he did not evaluate CAB's market share, in part because he did not have the data to do so.¹⁴⁰ Immediately following this testimony, Dr. Putnam contradicts himself by testifying that “there's very strong evidence of rapid

¹³⁹ Putnam Deposition, pp. 101 – 102.

¹⁴⁰ Putnam Deposition, pp. 104 – 105. Dr. Putnam testified “there isn't market share information, as far as I know, of any kind available. If you are going to define a market, you would want to include things like trenching, which is not even a product, and cable trays. But we don't have any data on how those things are used, so we couldn't construct a market and then therefore compute market shares.”

sales growth by CAB, so we don't need market share evidence in order to conclude that there's widespread sales."¹⁴¹ However, as Dr. Putnam admits a few minutes later in his deposition, rapid sales growth would have to be compared to a "proper benchmark" in order to demonstrate widespread sales.¹⁴² While Dr. Putnam claimed to use an industry growth rate as the benchmark to compare to CAB's sales growth, as discussed in the next section, this benchmark is not appropriate and suffers from numerous fatal flaws.

49. In sum, Dr. Putnam once again relies on assumptions and speculation to conclude that there has been "widespread" purchasing of CAB's products by a "substantial number of consumers."

3. *Growth in Net New PV Capacity Is Not an Appropriate Benchmark for Solar Cable Management Products*

50. As discussed in **Section V.A**, Dr. Putnam used the growth rate of net new utility-scale PV capacity as a proxy for what he calls the "industry growth rate," which he then compared to CAB's dollar sales growth to evaluate whether CAB's sales can be explained solely by industry growth. However, Dr. Putnam has provided no evidence or analysis that supports the use of net new PV capacity growth as a benchmark for the dollar sales of a specific input (i.e., cable management) used in PV installations.¹⁴³ As discussed below, there are multiple reasons for why dollar sales of cable management products, such as CAB's sales, would not grow at the same rate as net new PV capacity.

¹⁴¹ Putnam Deposition, p. 105.

¹⁴² Putnam Deposition, p. 107.

¹⁴³ Dr. Putnam testified in his deposition that he assumed that the amount of gigawatts in PV capacity and the number of feet of cables had an "approximately linear" relationship. (Putnam Deposition, pp. 160 – 161 ("every time I add a gigawatt of capacity, I had N standardized plants, which require, say, M feet of cable and thus M feet of cable management").)

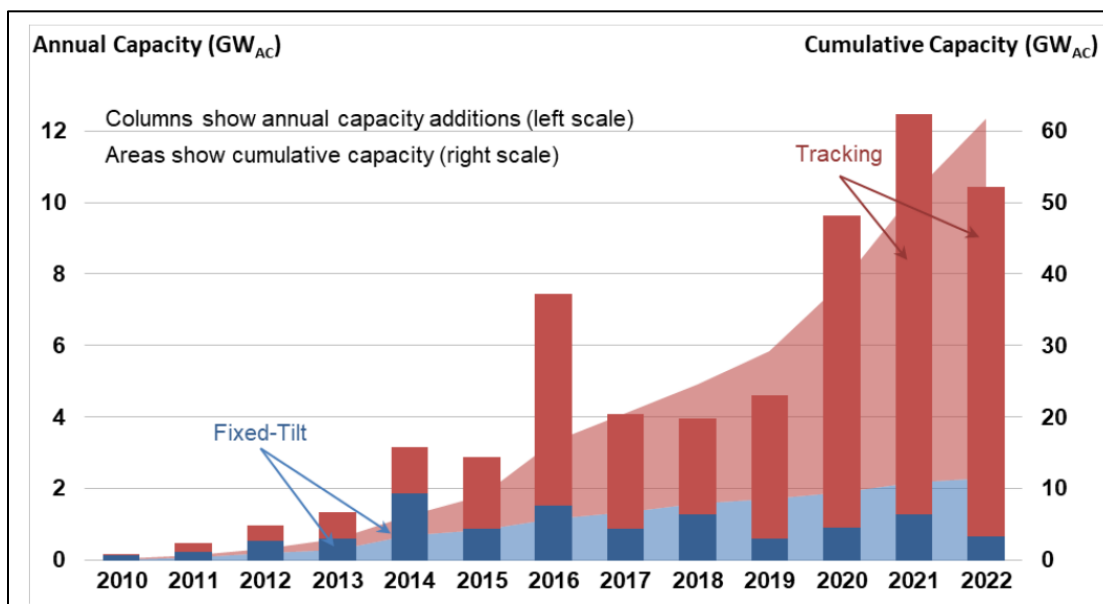
51. First, I understand that the amount of cable management products required for a specific utility-scale PV installation depends on the type of PV array (whether non-tracking or tracking). According to CAB's technical expert, Dr. Kern, the solar industry began to shift towards tracking systems (away from fixed arrays) in the 2000 to 2010 timeframe, which "resulted in the increased use of AC cables to power the devices, as well as the increased use of signal wiring, or data wiring, to monitor and communicate data within the PV solar array."¹⁴⁴ According to Mr. Bowman, former Manager of Global Design & Engineering for SunEdison, tracking systems require more space than fixed arrays and therefore require more cable management.¹⁴⁵ While Dr. Kern's and Mr. Bowman's observations suggest a potential reason for why CAB's sales could increase at a faster rate than net new PV capacity, Dr. Putnam did not consider this possibility in his report, let alone discuss changes in the industry such as this shift to tracking systems.
52. Consistent with Dr. Kern's declaration, publicly available data on utility-scale PV installations indicate that new PV capacity in the United States has increasingly been dominated by tracking systems since around the time that CAB introduced its solar cable

¹⁴⁴ Kern July 2024 Declaration, pp. 20 – 21. I understand that a "tracker" is a "mechanical device that positions the solar panels to face the sun in an optimal position throughout the day to maximize the amount of solar radiation that the solar panels can collect." (Declaration of Mitchel F. Bowman dated July 24, 2024 ("Bowman Declaration"), EX2028 in IPR2024-00178, p. 5.) According to Dr. Kern, a tracker typically will yield up to 120 to 140 percent of the KW per hour production of a fixed-array, depending on whether a one-axis or two-axis tracker is used. (Kern Deposition, pp. 34 – 35.) A fixed array, or fixed tilt array, refers to a solar panel installation in which the solar panels are mounted at a fixed angle and orientation. "5 Things You Need to Know about Fixed-tilt Solar Racking," Mibet Energy. (<https://www.mbt-energy.com/news/industry/2208161.html>, viewed on October 15, 2024.)

¹⁴⁵ Deposition of Mitchel Bowman taken October 11, 2024 ("Bowman Deposition"), pp. 16 – 17 ("A: Could you define 'capacity'? Q: A. Sure. How much energy that particular power plant can generate. A: Yeah, if you're defining 'capacity' as energy, trackers help boost the energy production on a day-to-day basis over an alternative fixed-tilt system. However, name plate capacity, you know, the rating of that power plant, you know, doesn't change tracker to fixed-tilt. One megawatt DC power plant in a fixed-tilt could be viewed as the same capacity as a one megawatt DC tracker. Q: Does the use of trackers increase cable management demands? A. Trackers are typically installed in a bigger spacing than a fixed-tilt system, because they're moving, the self-shading between modules needs to be considered, and trackers need a little more space than a fixed-tilt system. As a result, yes, you can say trackers require more cable management in that a one megawatt site of tracers is on more land than a one megawatt site at fixed-tilt."). See also Bowman Declaration, p. 6.

management products in 2014.¹⁴⁶ (See **Figure 3.**) Dr. Putnam did not address the potential impact of an increasing proportion of tracking systems when analyzing his claimed “industry growth rate.” He instead attributed the divergence in growth rates of net new PV capacity and CAB’s sales to the ’291 and ’551 Patents, while simply assuming away the possibility of “anything else here that is causing a shift in demand” for CAB’s products.¹⁴⁷ To the contrary, Dr. Kern’s declaration and the documented increase in tracking systems provides evidence that there could have been at least one other explanation for a “shift in demand” for CAB’s products that is not attributable to the claimed patented features.

Figure 3
Utility-Scale PV Capacity in the United States¹⁴⁸



53. Second, CAB’s revenues also depend on the prices it charges customers. Despite acknowledging that prices and other factors could influence CAB’s revenues,¹⁴⁹ Dr.

¹⁴⁶ **Exhibit 6.**

¹⁴⁷ Putnam Deposition, p. 117.

¹⁴⁸ Utility-Scale Solar, 2023 Edition, EX1056 in IPR2024-00178, p. 15.

¹⁴⁹ Putnam Deposition, pp. 115 – 117.

Putnam did not review prices of CAB's products, let alone investigate whether CAB's prices changed over time.¹⁵⁰ As a result, Dr. Putnam cannot rule out changes in prices that would explain why CAB's sales revenue grew at a more rapid pace than net new PV capacity. For example, the increase in tracker systems (as discussed above) or a decline in prices of other inputs to utility-scale PV installations,¹⁵¹ would likely increase demand for CAB's products, resulting in not only higher quantities demanded for CAB's products, but also higher prices. These higher prices for CAB's products contribute to CAB's revenue growth but are not captured in Dr. Putnam's claimed benchmark based on net new PV capacity. [REDACTED]

[REDACTED]¹⁵²

54. Third, Dr. Putnam's comparison of growth rates over the 2015 to 2023 time period is not an apples-to-apples comparison because of (a) the long lead times for PV installations and (b) the fact that CAB's products can be (and have been) used to retrofit pre-existing PV solar plants. As acknowledged by Dr. Putnam,¹⁵³ the time between the start of a project to completion can span multiple years, meaning new PV capacity is sometimes not realized

¹⁵⁰ Putnam Deposition, pp. 119 – 120.

¹⁵¹ As an example, prices of hardware used in PV installations fell over the Q4 2017 to Q4 2018. *See* Solar Market Insight Report 2018 Year In Review, EX1057 in IPR2024-00178, p. 6.

¹⁵² [REDACTED]

¹⁵³ Putnam Deposition, p. 186.

until several years after components were purchased, such as CAB's cable management products.¹⁵⁴ [REDACTED]

[REDACTED]¹⁵⁵ As a result, CAB's cable management product sales over the 2015 to 2023 time period are not directly comparable to the net new utility-scale PV capacity completed over the same time period.

[REDACTED]¹⁵⁶ As a result, net new PV capacity [REDACTED]¹⁵⁷ understates the market opportunities for CAB's products.

4. *Dr. Putnam Failed to* [REDACTED]

55. Dr. Putnam's analysis of CAB's claimed excess sales is based on [REDACTED]

¹⁵⁴ Brooks Deposition, pp. 34 – 35 (“Q. How long does it take for large scale system to become operational from a design stage? A. If we’re talking in the 100 to – 100 to 500 megawatt range, typically no less than a year and up to three years. There are – just to add to that, there are pieces of equipment in the project that might have 18 month lead times.”).

¹⁵⁵ [REDACTED]

¹⁵⁶ [REDACTED]

¹⁵⁷ Putnam Deposition, pp. 156 – 157. Dr. Putnam also testified that [REDACTED] (Putnam Deposition, p. 155.) According to Mr. Brooks, the Principal Engineer of Brooks Engineering, this shows “how much new capacity was brought on,” taking into account that “there’s going to be some capacity taken offline at the same time so that will subtract a little bit in the process.” (Brooks Deposition, pp. 10 and 39 – 40.)

[REDACTED]

a. CAB Products Sold through Distributors

56. CAB makes both direct customer sales and sales through distributors.¹⁵⁹ When CAB makes a sale through a distributor, CAB has no insight into the end customer's usage of the product.¹⁶⁰ [REDACTED]

[REDACTED]

[REDACTED] Because CAB has no insight into the end customer's usage of products sold through a distributor, there is no evidence that all sales of CAB solar cable management products made through distributors embody the '291 Patent.

b. [REDACTED]

57. By Dr. Putnam's admission, [REDACTED]

¹⁵⁸ [REDACTED]

¹⁵⁹ Smith Deposition, p. 139.

¹⁶⁰ Smith Deposition, p. 139.

¹⁶¹ [REDACTED]

¹⁶² Putnam Deposition, pp. 38 – 39.

[REDACTED]

c. CAB Products Not Marked as Embodying the '291 Patent

58. CAB's website provides an extensive list of part numbers and the CAB patents that cover each part.¹⁶⁵ According to this list, CAB marked 2-carrier hangers, 3-carrier hangers, 4-carrier hangers, 5-carrier hangers, and 6-carrier hangers as embodying the '291 Patent, but did not mark end-pier kits, mid-pier kits, or messenger wires as embodying the '291 Patent.¹⁶⁶ Dr. Putnam did not reconcile his inclusion of sales of end-pier kits, mid-pier kits, and messenger wires with CAB's own marking of products practicing the '291 Patent.

¹⁶³ [REDACTED]

¹⁶⁴ Putnam Deposition, pp. 38 – 39. *See also* Kern July 2024 Declaration, pp. 70 – 73 and 94 – 95 (Dr. Kern explaining that the Standard System includes cable hangers and explaining that the '291 Patent claims a system including cable hangers with multiple cable carrying surfaces and a cable carrier divider.).

¹⁶⁵ The following CAB Products are protected by U.S. Patents, EX1035 in IPR2024-00178.

¹⁶⁶ **Exhibit 4.**

5. *Dr. Putnam's Calculation of "Excess Sales" is Nothing More Than a Mathematical Exercise and Lacks Economic Meaning*

59. Dr. Putnam purported to "translate" his comparison of CAB's sales growth rate and the claimed industry growth rate into "predicted CAB sales" by projecting CAB's annual sales under the assumption that they would grow at (a) the average annual growth rate of CAB's actual sales (i.e., [REDACTED]) and (b) the average annual growth rate of net new installed utility-scale PV capacity (i.e., 24.2%).¹⁶⁷ According to Dr. Putnam, the difference in these two projections represents CAB's "sales over and above what would have been predicted from industry growth" (or "excess sales").¹⁶⁸ Dr. Putnam's excess sales analysis is nothing more than a mathematical exercise that adds no further guidance as to the question of whether CAB's products were commercially successful.

60. Before introducing his excess sales analysis in his declaration, Dr. Putnam claimed that CAB's sales grew at a much faster rate compared to net new installed utility-scale PV capacity.¹⁶⁹ [REDACTED]

[REDACTED]¹⁷⁰ Dr. Putnam then claimed to "translate that comparison to predicted CAB sales" in order to calculate the dollar amount of excess sales.¹⁷¹ [REDACTED]

¹⁶⁷ Putnam '291 Declaration, p. 33.

¹⁶⁸ Putnam '291 Declaration, p. 33.

¹⁶⁹ Putnam '291 Declaration, pp. 7 and 31 – 32.

¹⁷⁰ Putnam '291 Declaration, pp. 31 – 32 and Appendix 2.1.

¹⁷¹ Putnam '291 Declaration, p. 33. Dr. Putnam testified that he performed this exercise to present a "smoothed version of the actuals" and provide "an idea of on average how are these two series diverging." (Putnam Deposition, p. 179.)

[REDACTED]

[REDACTED] Hence, this mathematical exercise adds nothing new to Dr. Putnam's arguments and does not provide support that CAB's products were commercially successful.

61. Moreover, as discussed in **Section VI.A.4**, net new PV capacity is not an appropriate or reliable benchmark for cable management product sales, in part, because other factors have influenced demand for cable management products, including the increase in tracking systems. Dr. Putnam used this inappropriate benchmark to predict what CAB's sales would have been if they would have grown at the claimed industry growth rate. Thus, his predicted CAB sales at the industry growth rate (and, in turn, CAB's claimed excess sales) are flawed for the same reason his benchmark is flawed.

6. *CAB's Claimed Standard System Has Not Achieved Commercial Success Based on Dr. Putnam's Own Benchmark*

62. Dr. Putnam's excess sales analysis is based on all of CAB's sales that CAB contends are associated with its above-ground cable management systems that practice the '291 Patent and/or '551 Patent. As discussed in **Section III.F**, this includes products that, according to CAB, apply to its Standard System and Integrated System. Hence, putting aside the flaws discussed above, Dr. Putnam's excess sales analysis generally does not differentiate between CAB's Standard System and Integrated System, leading to his conclusion that both systems are commercially successful. [REDACTED]

[REDACTED]

[REDACTED]¹⁷² and Mr. Smith stated that [REDACTED]

¹⁷² Putnam '291 Declaration, p. 5.

[REDACTED] 173 [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] 174

63. The lack of commercial success for the Standard System is further demonstrated by Dr. Putnam’s own analysis of CAB’s sales data. In his declaration pertaining to the ’551 Patent, Dr. Putnam calculated the growth rates specific to [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] 175

64. [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]

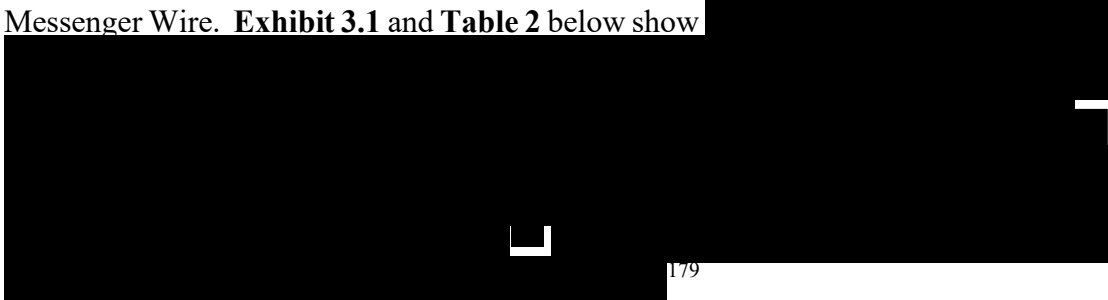
¹⁷³ Smith ’291 Declaration, p. 31.

¹⁷⁴ [REDACTED]

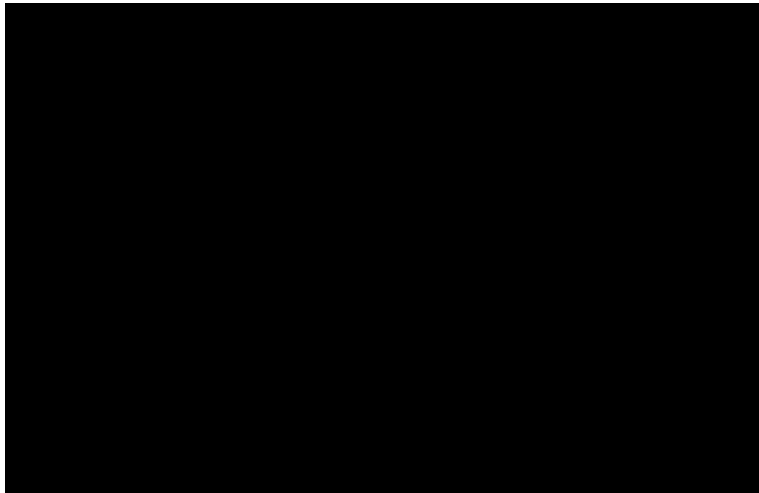
¹⁷⁵ Expert Declaration of Jonathan Putnam dated August 7, 2024, EX2044 in IPR2024-00139 (“Putnam ’551 Declaration”), Appendix 2.1.

¹⁷⁶ Phinney Declaration, p. 110. *See also* Kern July 2024 Declaration, p. 70.

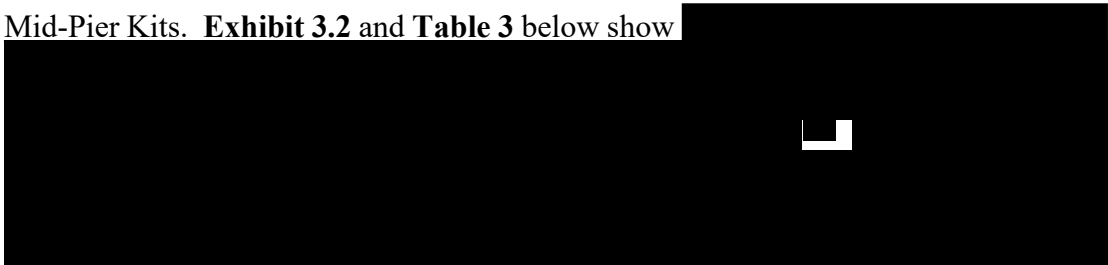
a. Messenger Wire. **Exhibit 3.1** and **Table 2** below show



¹⁷⁹



b. Mid-Pier Kits. **Exhibit 3.2** and **Table 3** below show



¹⁷⁷

Mr. Smith testified that CAB only sold mid-pier kits and hangers at first, while messenger wires were sold by other companies. (Smith Deposition, pp. 103 – 104.)

¹⁷⁸ **Exhibit 3.1.**

¹⁷⁹ Putnam '291 Declaration, Appendix 2.1.

¹⁸⁰



¹⁸¹



[REDACTED]

[REDACTED]

65. [REDACTED]
[REDACTED]
[REDACTED]

B. Dr. Putnam Has Not Established a Nexus Between CAB’s Claimed Excess Sales and the ’291 Patent

66. I understand that after establishing marketplace success (which Dr. Putnam has not done), a causal connection (or nexus) between that marketplace success and the patented invention must be established to demonstrate commercial success.¹⁸⁵ Consistent with my understanding, Dr. Putnam, citing to a Federal Circuit opinion, stated that “for objective

¹⁸² **Exhibit 3.2.**

¹⁸³ Putnam ’291 Declaration, Appendix 2.1.

¹⁸⁴ [REDACTED]

¹⁸⁵ See Section IV.

evidence of secondary considerations to be accorded substantial weight, its proponent *must* establish a nexus between the evidence and the merits of the claimed invention.”¹⁸⁶ Although Dr. Putnam adopted a “three-step approach” to “tie” CAB’s claimed excess sales to the ’291 Patent (and the ’551 Patent),¹⁸⁷ as discussed below, Dr. Putnam’s analysis in no way demonstrates a nexus between CAB’s claimed excess sales and the ’291 Patent.

1. Dr. Putnam’s Own Admissions Highlight the Lack of Nexus Between Claimed Excess Sales and the ’291 Patent

67. In the current matter, which relates to the ’291 Patent, a causal connection, or nexus (if any), must be established between the claimed marketplace success and the ’291 Patent. According to Dr. Putnam, the “inferential question” in this matter is whether a product’s success can be “associated reliably with an *individual* invention.”¹⁸⁸ However, this is the precise question Dr. Putnam has failed to answer and admits that he cannot answer. Indeed, Dr. Putnam determined that it is not possible to decompose CAB’s claimed excess sales between the ’291 and ’551 Patents (i.e., he has not tied claimed excess sales to an *individual* invention).¹⁸⁹ Dr. Putnam’s own admission is a self-inflicted fatal flaw in his analysis which cannot be overcome. Specifically, Dr. Putnam stated the following:

- a. “I investigated whether sales made possible by the ’291 and ’551 patents could be further decomposed into separate causes and quantified. I conclude that they cannot.”¹⁹⁰
- b. “The true share of ’291-only sales is said to be ‘non-identified.’”¹⁹¹

¹⁸⁶ Putnam ’291 Declaration, pp. 11 – 12. (Emphasis added.)

¹⁸⁷ Putnam ’291 Declaration, p. 35.

¹⁸⁸ Putnam ’291 Declaration, p. 17– 18. (Emphasis added.)

¹⁸⁹ Putnam ’291 Declaration, p. 39.

¹⁹⁰ Putnam ’291 Declaration, p. 36.

¹⁹¹ Putnam ’291 Declaration, p. 42.

- c. “The same indeterminacy afflicts the interpretation of CAB sales in subsequent years [years after 2018].”¹⁹²
 - d. “[I]t is impossible to allocate the gains from those additional sales [after the integrated grounding system was introduced in 2018] between the ’291 patent and the ’551 patent, because the ’551 patent builds on, and renders more valuable, the inventions claimed in the ’291 patent.”¹⁹³
 - e. Dr. Putnam also testified in his deposition that he does not “make any claim that you can draw a line and say this fraction of sales is attributable to the ’291 and the remaining fraction is attributable to the ’551.”¹⁹⁴
68. By admitting that the claimed excess sales cannot be disaggregated between the ’291 Patent and ’551 Patent (as demonstrated by the above admissions), Dr. Putnam has failed to establish a nexus between excess sales and the ’291 Patent.¹⁹⁵ This is apparent in Dr. Putnam’s conclusion, which states that he concluded that “the ’291 and the ’551 patent each caused CAB’s substantial commercial success.”¹⁹⁶ The fact that Dr. Putnam always ties the claimed commercial success to both the ’291 and the ’551 Patent (and never ties commercial success to only the ’291 Patent) provides further evidence that Dr. Putnam has not established a nexus between CAB’s claimed excess sales (or CAB’s sales) and the ’291 Patent.

2. *Dr. Putnam Failed to Consider CAB’s Other Patents as Potential Contributors to the Sales of CAB’s Products*

69. As discussed above, Dr. Putnam has not demonstrated a nexus between CAB’s claimed excess sales and the ’291 Patent (as opposed to, for example, the ’551 Patent). Despite

¹⁹² Putnam ’291 Declaration, p. 39. (Bracketed text added for clarification.)

¹⁹³ Putnam ’291 Declaration, p. 38. (Bracketed text added for clarification.)

¹⁹⁴ Putnam Deposition, p. 184.

¹⁹⁵ Alternatively stated, Dr. Putnam has failed to establish that the inventions claimed in the ’291 Patent are a “substantial cause of commercial success.” (See Putnam Deposition, pp. 107 – 108, where Dr. Putnam defined “actual nexus” to mean that “the inventions claimed in the patent are a substantial cause of commercial success.”)

¹⁹⁶ Putnam ’291 Declaration, p. 41.

stating that “in theory, there could be other reasons for CAB’s success [other than the ’291 and ’551 Patents],” Dr. Putnam concluded that “[o]n the record evidence, there is simply no reasons to believe that any unclaimed ‘hidden factor’ drove demand for CAB’s systems.”¹⁹⁷ Contrary to Dr. Putnam’s assertion, a review of CAB’s own website highlights factors that may have driven the demand for CAB’s products, which were not considered by Dr. Putnam. For example, CAB’s website has an entire webpage dedicated to “CAB Patents” and lists products that are protected by its U.S. patents.¹⁹⁸ Based on my review of this webpage, which CAB claims to have updated on July 22, 2024 (two days prior to the date on which Dr. Putnam submitted his declaration), every part that CAB identifies on this page as practicing the ’291 Patent (or the ’551 Patent) practices CAB patents *other than the ’291 Patent*.¹⁹⁹ Dr. Putnam appears to have ignored this evidence. This evidence is consistent with the conclusion that there is not any discernible nexus that can be established between CAB’s claimed excess sales (or CAB’s sales) and the ’291 Patent. Indeed, Dr. Putnam has not ruled out that CAB’s claimed excess sales have a nexus to these other patents (as opposed to the ’291 Patent).

70. Specifically, CAB has at least the following patents which are practiced by the parts included in Dr. Putnam’s evaluation of claimed excess sales. In fact, every part included in Dr. Putnam’s analysis that is on this CAB webpage is identified by CAB as practicing multiple CAB patents.

a. Three patents with the same name (“Locking Cable Hanger and Method of Using”) and the same priority date as the ’291 Patent.²⁰⁰

¹⁹⁷ Putnam ’291 Declaration, p. 36. (Bracketed text added for clarification.)

¹⁹⁸ “The following CAB Products are protected by U.S. Patents,” EX1035 in IPR2024-00178.

¹⁹⁹ **Exhibit 4.** *See also* “The following CAB Products are protected by U.S. Patents,” EX1035 in IPR2024-00178.

²⁰⁰ **Exhibit 5.** U.S. Patent Nos. 10,978,861; 11,569,646; and RE49,170.

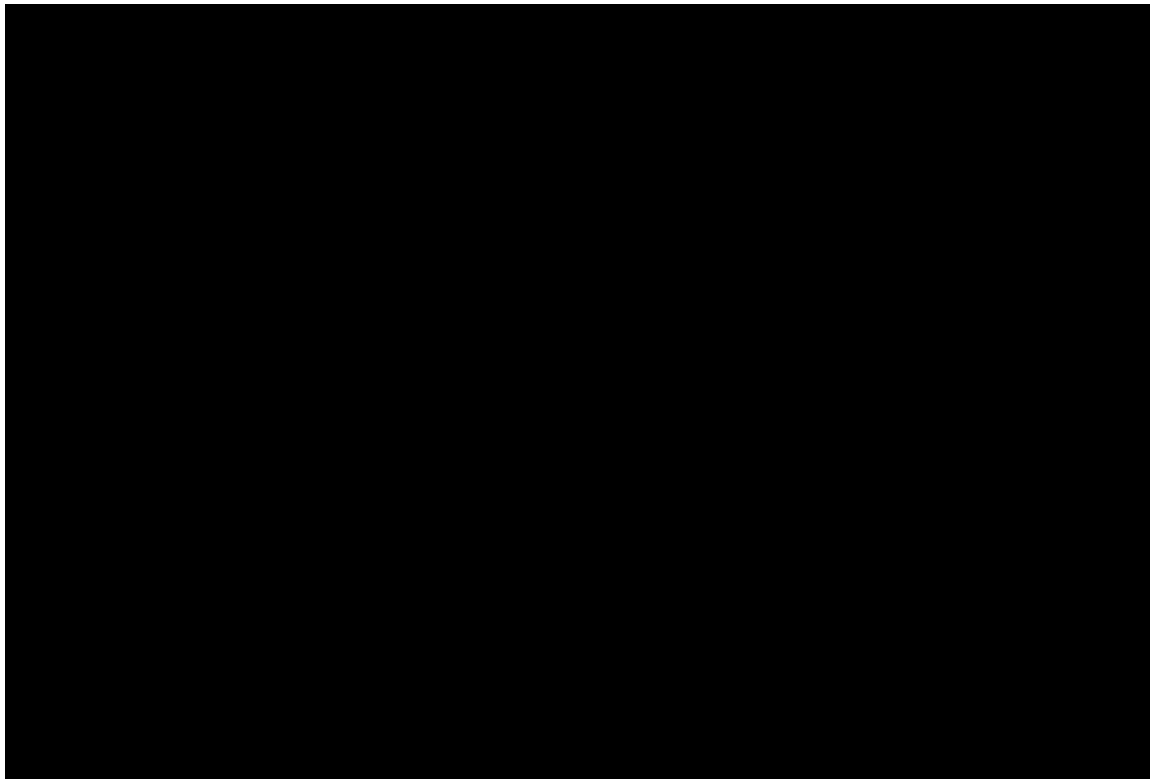
- b. Three patents entitled “Gripping Cable Hanger and Method of Using” with a priority date of November 29, 2014, the same priority date as the ’291 Patent.²⁰¹
 - c. Eight design patents with priority dates in 2014 and 2015.²⁰²
 - d. The ’551 Patent and two other patents with the same priority date and the same name as the ’551 Patent (“Grounding System”).²⁰³
71. **Figure 4** below shows (a) the sales of CAB parts used in Dr. Putnam’s excess sales calculation and (b) the priority dates of the CAB patents listed on the CAB patent marking website as covering the CAB parts included in Dr. Putnam’s analysis. Dr. Putnam has not shown that the sales of CAB parts are a discernible result of the claimed invention of the ’291 Patent separate and apart from numerous other CAB patents. With regard to the claimed contributions of the ’291 and ’551 Patents, Dr. Putnam’s conclusion that “CAB’s sales growth cannot be attributed to any feature not claimed in one patent or the other”²⁰⁴ is unsubstantiated and incorrect.

²⁰¹ **Exhibit 5.** U.S. Patent Nos. 9,800,028; 10,063,039; and 11,437,790.

²⁰² **Exhibit 5.**

²⁰³ **Exhibit 5.** U.S. Patent Nos. 10,177,551; 10,461,518; and 10,811,859.

²⁰⁴ Putnam ’291 Declaration, p. 6.



72. The above CAB patents are not “hidden factors.”²⁰⁶ Rather, they are “evidence showing the objective evidence is ‘due to extraneous factors other than the patented invention’ that refutes Dr. Putnam’s claim that the ’291 Patent has any nexus to the claimed excess sales or sales of products embodying the ’291 Patent. Dr. Putnam’s failure to consider these patents (which are clearly identified on CAB’s website) is further evidence that he has not established (and cannot establish) a nexus between CAB’s claimed excess sales (or sales of parts embodying the ’291 Patent) and the ’291 Patent.

3. *Dr. Putnam’s 50 Percent Division of CAB’s Claimed Excess Sales
Between the ’291 and ’551 Patents is Arbitrary and Unsupported*

73. Dr. Putnam opined that the claimed excess sales cannot be decomposed between the ’291 and ’551 Patents because these patents allegedly are “economic complements” or goods

²⁰⁵ **Exhibit 2** and **Exhibit 5**.

²⁰⁶ Putnam ’291 Declaration, p. 36.

that are consumed together such as peanut butter and jelly.²⁰⁷ According to Dr. Putnam, the '291 Patent embodied by every CAB system is the “peanut butter of the CAB story” while the '551 Patent embodied by the Integrated System is the “jelly.”²⁰⁸ Dr. Putnam claims that for strict complements, “one can reasonably assign a fraction of the total value (50%) to each member.”²⁰⁹ Although Dr. Putnam recognized that in this case, there is no “reasonable instrument” for assigning value to each of these two patents, he nevertheless divided (arbitrarily and with no basis) the claimed excess sales with 50 percent attributable to the '291 Patent and 50 percent attributable to the '551 Patent “[f]or illustrative purposes only.”²¹⁰ This division of sales, however, is entirely meaningless and in no way supports Dr. Putnam’s conclusion that CAB’s claimed excess sales are attributable to either the '291 or '551 Patent (which Dr. Putnam claims is not possible to determine).²¹¹ Dr. Putnam acknowledged in his deposition that there is no evidence to support a 50-50 split.²¹²

74. Dr. Putnam claims that the “non-identification of the true share [of claimed excess sales] is problematic from a statistical point of view,” but contends that from a “substantive point of view, indeterminacy is irrelevant.”²¹³ This claim is false, as without identifying the claimed excess sales attributable to the '291 Patent, Dr. Putnam cannot determine that the '291 Patent “caused CAB’s substantial commercial success.”²¹⁴ Dr. Putnam’s “non-

²⁰⁷ Putnam '291 Declaration, p. 40.

²⁰⁸ Putnam '291 Declaration, p. 40.

²⁰⁹ Putnam '291 Declaration, pp. 39 – 40.

²¹⁰ Putnam '291 Declaration, pp. 40 – 41.

²¹¹ Putnam '291 Declaration, p. 39.

²¹² Putnam Deposition, p. 188. Dr. Putnam also testified that “decomposing causation is not usually as simple as just adding up the four effects and getting 100 percent causation and saying here is how we decompose the total success into four potential causes of success. It’s just harder to do than that.” (Putnam Deposition, p. 114.)

²¹³ Putnam '291 Declaration, p. 40.

²¹⁴ Putnam '291 Declaration, p. 41.

identification” of the sales of CAB products attributable to each patent is nothing more than an admission that he has not established a nexus between claimed excess sales and the ’291 Patent, which he ought to have done.

75. Dr. Putnam further contends that it is not possible to “read the record evidence and conclude that only a sliver of CAB’s excess sales is attributable to one patent or the other.”²¹⁵ In deposition, Dr. Putnam testified that the only way one could conclude that the ’291 and ’551 Patents are not a substantial cause of CAB’s excess sales is if the division was “3-97” or “97-3,” and then “all of the excess was attributable to only – really to one of the inventions.”²¹⁶ Again, Dr. Putnam appears to not have considered all evidence in the record. As discussed in **Section VI.A.6**, [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]

76. Moreover, as discussed above, Dr. Putnam has inappropriately assumed that CAB’s sales are driven by only the inventions claimed by the ’291 and ’551 Patents. His analogy of peanut butter (i.e., the ’291 Patent) and jelly (i.e., the ’551 Patent) ignores other ingredients (or inventions) that may have contributed to CAB’s sales. For example, CAB’s other patents that claim methods and designs related to components of CAB’s Standard System and Integrated System may have contributed to sales—which could be likened to other

²¹⁵ Putnam ’291 Declaration, p. 41.

²¹⁶ Putnam Deposition, pp. 187 – 188.

²¹⁷ Smith ’291 Declaration, p. 31.

potential components (or “complements”) of a peanut butter and jelly sandwich, such as honey and granola. Dr. Putnam has not established that sharing the claimed excess sales between only the ’291 and ’551 Patents is appropriate when CAB has marked its products with other CAB patents.

VII. DR. PUTNAM HAS FAILED TO ESTABLISH THAT CLAIMED COST SAVINGS OF CAB’S PRODUCTS ARE ENTIRELY (IF AT ALL) ATTRIBUTABLE TO THE CLAIMED INVENTIONS OF THE ’291 PATENT

77. Dr. Putnam asserted that the claimed inventions of the ’291 and ’551 Patents “substantially reduce the cost of materials and labor in connection with the installation and management of the various kinds of electrical cables in a so-called ‘Balance of Systems’ (BOS) within a utility-scale photovoltaic (PV) installation relative to prior-art technology.”²¹⁸ As purported support for this assertion, Dr. Putnam identified in his declaration three examples of customer evaluations of cost savings related to CAB’s above-ground cable management systems. However, the cost savings presented in the Putnam Declaration are not tied directly to the ’291 Patent. Dr. Putnam’s failure to establish a nexus between the claimed cost savings and the claimed inventions of the ’291 Patent renders his discussion of cost savings to be unreliable.

78. In the remainder of this section, I discuss the flaws in Dr. Putnam’s representation and analysis of the cost savings associated with CAB’s products.

A. Dr. Putnam Did Not Rule Out That CAB’s Other Patents Contributed to the Claimed Cost Savings

79. As discussed in **Section VI.B.2**, a webpage dedicated to “CAB Patents” on CAB’s website indicates that every product that CAB identifies on this page as practicing the ’291 Patent

²¹⁸ Putnam ’291 Declaration, p. 4.

also practices *other CAB patents*.²¹⁹ Just as these other patents may contribute to the claimed commercial success of CAB's products, they also could contribute to the cost savings claimed by customer evaluations of CAB's products. Dr. Putnam did not consider or address this possibility, and thus cannot reliably conclude that the cost savings are attributable solely (if at all) to the '291 Patent.

B. SunPower's Evaluation of Cost Savings [REDACTED]

80. Dr. Putnam claimed that SunPower evaluated CAB's Standard System and found it reduced installation costs [REDACTED].²²⁰ However, as discussed below,

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] As a result, Dr. Putnam has not shown that the cost savings identified by SunPower can be entirely attributed (if at all) to the claimed inventions of the '291 Patent.

81. According to the declaration of Mr. Smith, SunPower's evaluation of CAB's above-ground cable management products for PV installations occurred in 2013, before he even

²¹⁹ **Exhibit 4.** See also "The following CAB Products are protected by U.S. Patents," EX1035 in IPR2024-00178.

²²⁰ Putnam '291 Declaration, pp. 25 – 26. See also Field Process Change Review 1, SunPower, EX2008 in IPR2024-00178, p. 8.

²²¹ Kern July 2024 Declaration, pp. 72 – 73 and A6.

²²² Putnam Deposition, pp. 38 – 40.

developed a multi-carrier hanger.²²³ In his declaration, Mr. Smith discussed the early development of CAB's products, noting that early versions of CAB's products in 2013 included only single-carrier cable rings and saddles.²²⁴ Mr. Smith also stated that CAB worked with SunPower in November 2013 to install a "mock-up of CAB's cable rings and saddles suspended from a messenger wire in a large solar power plant located in Davis, California" in order to evaluate the cost reduction due to reduced material costs, shipping and labor.²²⁵ The SunPower review document cited by Dr. Putnam contains SunPower's evaluation of this mock-up.²²⁶ **Figure 5** presents an image from SunPower's document, showing a messenger wire and *single-carrier rings/saddles*. 

.²²⁷

²²³ Mr. Smith's declaration indicates that he did not design a "new multi-carrier hanger that included two cable-carrying surfaces side by side, and a separate data loop at the top of the hanger for data cables" until after a January 2014 meeting with Mitchel Bowman of SunEdison. (Smith '291 Declaration, p. 15.)

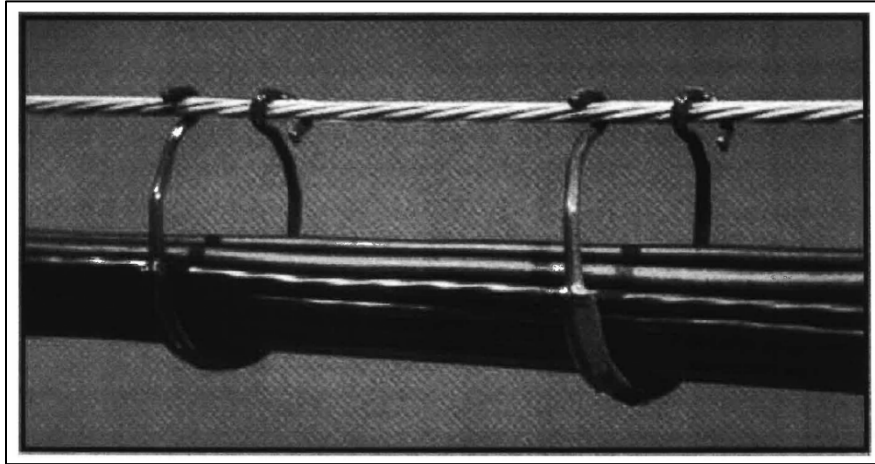
²²⁴ Smith '291 Declaration, pp. 6 – 8. *See also* CAB Cable Rings & Saddles for Solar Panel Wiring, EX2007 in IPR2024-00178.

²²⁵ Smith '291 Declaration, p. 11.

²²⁶ Smith '291 Declaration, p. 11. *See also* Field Process Change Review 1, SunPower, EX2008 in IPR2024-00178, pp. 7 – 8.

²²⁷ Smith Deposition, pp. 60 – 61.

Figure 5
Image of CAB's Messenger Wire and Single-Carrier Rings/Saddles
Included in SunPower's November 2013 Review of CAB's Products²²⁸



82.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

C. SunEdison's Evaluation of Cost Savings Shows [REDACTED]

83. Dr. Putnam also cited to an evaluation by SunEdison in 2014, wherein SunEdison projected CAB's Standard System to cut installation costs by [REDACTED] relative to SunEdison's current state system.²²⁹ However, within the same evaluation, SunEdison compared CAB's Standard System installation costs to another alternative system referred to as the Vega Project. (See **Figure 6**.) Relative to the installation costs of the Vega Project, CAB's

²²⁸ Field Process Change Review 1, SunPower, EX2008 in IPR2024-00178, p. 4.

²²⁹ Putnam '291 Declaration, pp. 24 – 25. See also CAB Prototyping at SolarTac, EX2030 in IPR2024-00178, p. 2.

Standard System had projected savings of [REDACTED].²³⁰ By reporting the cost savings related only to a comparison between CAB's Standard System and SunEdison's current state system, rather than other, less costly alternatives shown in the same document, Dr. Putnam overstates the cost savings unique to CAB's Standard System.²³¹

Figure 6
Summary of Costs Across Approaches Considered by SunEdison²³²

Per AP90 w/ 30 Rows			
	Current State PV Wire in Conduit, CB Cable Direct Bury	Vega Project* 100% Direct Bury	Future State CAB
Material Cost	\$5,105	\$3,841	[REDACTED]
Labor Cost	\$18,312	\$10,156	[REDACTED]
Total (\$)	\$23,417	\$13,997	[REDACTED]
Total (\$/watt)	\$0.069	\$0.041	[REDACTED]

²³⁰ CAB Prototyping at SolarTac, EX2030 in IPR2024-00178, p. 2. [REDACTED]
[REDACTED] I understand that SunEdison's evaluation of CAB's Standard System did not account for the costs associated with an equipment grounding conductor. (Bowman Deposition, pp. 70 – 73.) Consequently, the total cost associated with implementing CAB's Standard System, which would require an equipment grounding conductor, were understated in SunEdison's evaluation. (See Bowman Declaration, p. 19, where Mr. Bowman explains that CAB's above-ground messenger wire supported cable management system, before integrated grounding was offered, was "typically achieved by using a separate copper grounding conductor that ran along with the messenger wire and electrical cables," which involved "very expensive" copper and "extensive labor and associated cost" to install.)

²³¹ SunEdison's document states that "100% direct bury for Vega was a one time approval. Both engineering and services are uncomfortable with direct bury of #6 AWG cable or smaller." (CAB Prototyping at SolarTac, EX2030 in IPR2024-00178, p. 2.) Dr. Putnam interpreted that note in the document as meaning [REDACTED]
[REDACTED] (Putnam Deposition, pp. 195 – 198.) According to Mr. Smith, 100% direct bury is a method of trenching that is used in PV power plant installations. (Smith '291 Declaration, p. 12: "Trenching is achieved by either conduit or direct bury methods. Conduit refers to enclosing the cables in pipes that are then buried in the ground. Direct bury refers to placing the cables in a trench and directly covering the cables with some form of earth, sand, or soil.") Thus, putting aside Dr. Putnam's own interpretation of the notes in the SunEdison document, it is reasonable to compare the costs associated with CAB's Standard System to that of other alternatives, such as the 100% direct bury approach, as contained in SunEdison's evaluation.

²³² CAB Prototyping at SolarTac, EX2030 in IPR2024-00178, p. 2.

D. Dr. Putnam's Evaluation of Cost Savings from CAB's Integrated System is Misleading

84. Dr. Putnam claims that CAB's Integrated System yielded further savings over CAB's Standard System and references a cost comparison of CAB's Standard System and "New Ground Max Cable Management System."²³³ Dr. Putnam claims the estimated savings provided by CAB's Integrated System were "about \$ [REDACTED] over the entire installation."²³⁴ However, the cost savings of \$ [REDACTED]
[REDACTED]
[REDACTED]²³⁵ [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]²³⁶ In addition, if both the Standard System and the Integrated System practice the '291 Patent, as Dr. Putnam has assumed, the claimed cost savings of the Integrated System over the Standard System is not informative as to the advantages of the '291 Patent.²³⁷

* * * * *

85. My analyses and opinions contained in this declaration are based upon information available to date. I reserve the ability to review documents, deposition transcripts, or other

²³³ Putnam '291 Declaration, p. 26. *See also* Cost Comparison of CAB Standard vs New Ground Max Cable Management System, EX2049 in IPR2024-00178.

²³⁴ Putnam '291 Declaration, p. 26.

²³⁵ Cost Comparison of CAB Standard vs New Ground Max Cable Management System, EX2049 in IPR2024-00178.

²³⁶ [REDACTED]

²³⁷ Putnam Deposition, pp. 25 – 29.

information still to be produced by the parties to this dispute and to supplement my opinions based upon that review.

Minh P. Doan

Minh P. Doan
October 17, 2024

Appendix A



MINH P. DOAN
Vice President

Phone: 214 523 1445
Fax: 214 523 1401
minh.doan@analysisgroup.com

Park Place Center
2911 Turtle Creek Boulevard, Suite 600
Dallas, TX 75219

Ms. Doan has 17 years of experience in evaluating economic damages and providing expert testimony in complex commercial disputes, including patent infringement, copyright, trademark, trade secrets, breach of contract, false advertising, class certification, loss of earnings, and antitrust matters. She has submitted numerous expert reports and testified as an expert witness in deposition and trial. Her work leading large engagements from strategy to implementation has included developing damages models and determining lost sales, lost profits, unjust enrichment, reasonable royalties, and price erosion damages. In patent infringement matters, Ms. Doan has evaluated commercial success issues and economic criteria relevant to obtaining an injunction. She also has expertise in assessing claims of class-wide economic injury and damages in class certification matters. Ms. Doan has been recognized as among the top economic experts for IP matters by *Intellectual Asset Management* (IAM) in the IAM Patent 1000. She is an associate of the Society of Actuaries. Prior to joining Analysis Group, she worked in pension actuarial consulting.

EDUCATION

2005	M.S., actuarial science, University of Iowa
2003	M.A., economics, Northwestern University
2001	B.A., mathematics and economics (<i>summa cum laude</i>), Berea College

PROFESSIONAL EXPERIENCE

2007–Present	Analysis Group, Inc. <i>Vice President (2013–Present)</i> <i>Manager (2011–2012)</i> <i>Associate (2008–2010)</i> <i>Senior Analyst (2007)</i>
2006–2007	Watson Wyatt Worldwide, Retirement Practice <i>Actuarial Analyst</i>
2004–2005	University of Iowa, Department of Statistics and Actuarial Science <i>Teaching Assistant</i>
2002–2003	Northwestern University, Department of Economics <i>Teaching Assistant</i>

PROFESSIONAL AFFILIATIONS

Society of Actuaries, *Associate*

American Economic Association

Licensing Executives Society

EXPERT ENGAGEMENTS¹

- ***OKL Engineering, Inc. v. Lisa Montgomery, EKL Machine, Inc. et al.***
In the Court of Common Pleas, Hamilton County, Ohio, Consolidated Case Nos. A 2201573 and A2202219
Retained as an economic expert for EKL, a tooling and equipment provider that sells bodymakers (i.e., machines that create the basic can body for containers) and bodymarker parts, among other products. EKL and certain individual defendants were alleged to misappropriate trade secrets involving manufacturing drawings / spare parts and tortiously interfere with customer relationships. Submitted rebuttal expert report evaluating plaintiff's lost profits claims. (2024)
- ***PetConnect Rescue, Inc. et al. v. Pet Connect Rescue, Inc., David Salinas, et al.***
US District Court for the Southern District of California, Civil Action No. 3:20-cv-005277-H-KSC
Retained as an economic expert for PetConnect Rescue, which alleged that the defendants have benefited from transporting puppies mislabeled as "rescues" from "Pet Connect Rescue" to pet stores in at least California and Illinois and from selling the puppies to consumers. Evaluated disgorgement of defendants' profits as a result of the infringement of PetConnect's trademark. Submitted affirmative report, rebuttal report, and declaration (2022). Provided trial testimony (2024).
- ***Luiz Pimenta, MD, Ph.D. v. NuVasive, Inc.***
Superior Court in the State of California, County of San Diego, Case No. 37-2018-00016298-CU-BC-CTL
Retained as an economic expert for Dr. Pimenta, renowned for pioneering spine surgery via a lateral approach, to quantify the royalties NuVasive allegedly owes Dr. Pimenta after the termination of a consulting agreement between NuVasive and Dr. Pimenta. Issued expert report exhibits detailing calculations of relevant sales and unpaid royalties for different product categories. (2024)
- ***Howmedica Osteonics Corp., a subsidiary of Stryker Corporation v. Brett Howard and Corey Petulla***
US District Court, District of New Jersey, Case No. 2:19-cv-19254-EP-AME
Retained as a damages expert for the Defendants, who were formerly sales representatives for Howmedica. Evaluated the claimed monetary remedies (lost profits, other consequential losses, and unjust enrichment) under (a) breach of non-competition, customer non-solicitation, and confidential agreements, (b) tortious interference with Howmedica's customers, and (c) misappropriation of trade secrets. Submitted an expert report. (2024)
- ***Andrew Levine M.D. P.A. and Andrew Levine M.D. v. ISD Renal, Inc., DaVita Healthcare Partners Inc., Brajesh Bhatla M.D., Juan Guardia M.D., Laura Yates, David Chapa, and Nain Wai Phyto M.D.***

¹ Clients are underlined.

In the United States District Court, 93rd Judicial District, Hidalgo County, Texas, Cause No. C-1601-20-B

Retained as an economic expert for the DaVita Defendants to evaluate Plaintiff's claimed lost patient damages resulting from Defendants' alleged interference with Plaintiff's business relationships with certain patients who received treatment at DaVita's facilities. Determined Plaintiff's claimed loss of medical directorship compensation as a result of DaVita's alleged breach of medical director agreements causing Plaintiff to resign his privileges. Submitted an expert report. (2024)

▪ **NuVasive, Inc. v. Patrick Miles and Alphatec Holdings, Inc.**

In the Court of Chancery of the State of Delaware, Case No. 2017-0720-SG

Retained as an economic expert for the Defendants to evaluate Patrick Miles' claimed economic gains resulting from his equity investment in Alphatec Holdings while employed by NuVasive constituting an alleged breach of fiduciary duties. Also evaluated NuVasive's claimed lost profits damages associated with a loss of distributor and sales representatives to Alphatec. Submitted an expert report and provided deposition testimony and trial testimony. (2023)

▪ **Alphatec Spine, Inc. v. NuVasive, Inc.**

Superior Court of the State of California, County of San Diego, Central, Lead Case No. 37-2017-00038583-CU-BC-CTL

Retained as an economic expert for Alphatec to evaluate economic damages resulting from Alphatec's alleged inducement of NuVasive's sales distributors and sales representatives to breach contractual agreements with NuVasive including non-compete covenants. Evaluated NuVasive's claimed lost profits damages and the claimed fair market value impact of the alleged wrongful conduct. Submitted a disclosure of expert opinions and provided deposition testimony (2023) and trial testimony (2024).

▪ **Jacqueline Medina and Cresencio Medina v. United States of America**

US District Court, District of Colorado, Civil Action No. 21-CV-2687-SKC

Retained as an economic expert for the United States of America to evaluate Plaintiffs' claimed lost earnings and Social Security benefits as well as life-care plan expenses allegedly resulting from an injury while Plaintiffs were horseback riding on the premises of the United States Air Force Academy. Submitted an expert report. (2023)

▪ **C.R. Bard, Inc. v. Atrium Medical Corp.**

US District Court, District of Arizona, Case No. 21-00284-PHX-DGC

Retained as an economic expert for C.R. Bard, a medical device developer. Calculated the unpaid royalties plus interest that Atrium owed to C.R. Bard under a license agreement involving a minimum royalty provision. Evaluated the opposing expert's opinion on the damages C.R. Bard would owe to Atrium if the court finds in favor of Atrium's counterclaims of breach of contract and negligent and fraudulent misrepresentation. Submitted two expert reports and provided deposition testimony. (2022)

▪ **California Expanded Metal Products Company and ClarkDietrich Building Systems v. James Klein, BlazeFrame Industries, Ltd., and Safti-Seal, Inc.**

US District Court, Western District of Washington, Case No. C18-0659JLR

Retained as an economic expert for CEMCO and ClarkDietrich to evaluate the damages and monetary remedies available to the plaintiffs from the defendants' breach of a settlement agreement

and contempt of a court-ordered injunction to cease selling the infringing products. Submitted two expert reports and provided deposition testimony. (2022)

▪ **Ryan Struck v. 3M Company, et al.**

US District Court for the Northern District of Florida, Case No. 3:19-md-2885

Retained as an economic expert for 3M Company, the defendant in a personal injury litigation filed by the plaintiff, who claimed that as a result of using allegedly defective earplugs he has developed partial hearing loss and tinnitus. Evaluated the plaintiff's claimed pecuniary losses in the form of claimed lost earnings as a result of allegedly not achieving promotions in the US Army due to his hearing impairment and claimed future medical care expenses. Submitted an expert report and provided deposition testimony. (2022)

▪ **Wesley Norton v. 3M Company, et al.**

US District Court for the Northern District of Florida, Case No. 3:19-md-2885

Retained as an economic expert for 3M Company, the defendant in a personal injury litigation filed by the plaintiff, who claimed that as a result of using allegedly defective earplugs he has developed partial hearing loss and tinnitus. Evaluated the plaintiff's claimed pecuniary losses in the form of claimed lost earnings (including claimed loss of earnings capacity and diminished worklife expectancy) and claimed future medical care expenses. Submitted an expert report and provided deposition testimony. (2022)

▪ **Estate of Brieux Dash, et al., v. United States of America**

US District Court for the Northern District of Florida, Case No. 22-80015-CIV-DMM

Retained as an economic expert for the United States of America, the defendant in a wrongful death action filed by the estate and surviving family of the decedent claiming that the VA hospital failed to properly monitor decedent allowing him to commit suicide. Evaluated claimed lost income and benefits. Submitted an expert report and provided deposition testimony. (2022)

▪ **R. Greg Leaver. v. United States of America**

US District Court for the District of Colorado, Case No. 1:21-cv-153

Retained as an economic expert for the United States of America, the defendant in a personal injury litigation filed by the plaintiff, who claimed that a car accident with an FBI employee exacerbated his pre-existing medical conditions and caused him not to be able to complete his master's/Ph.D. Evaluated the plaintiff's claimed lost earnings, essential/home services losses, and future prescription medication costs. Evaluated an economic causal link between the accident and the plaintiff's claimed lost earnings. Submitted an expert report. (2022)

▪ **GCP Applied Technology Inc. v. AVM Industries, Inc.**

US District Court, Central District of California, Case No. 2:19-cv-07475-MWF-FFM

Retained as an economic expert for GCP, the owner of a patent related to waterproofing membrane technology. Evaluated GCP's lost profits and reasonable royalty damages. Submitted an expert report and provided deposition testimony. (2021)

▪ **GoPlus Corporation v. Crown Equipment Corporation, d/b/a Crown Lift Trucks**

US District Court, Southern District of Georgia, Savannah Division, Civil Action No. 4:20-cv-00034-RSB-CLR

Retained as an economic expert to evaluate GoPlus's monetary damages as a result of Crown's failure

to satisfy its contractual obligations to provide shelving for GoPlus's Georgia warehouse that met sizing specifications and weight tolerances GoPlus communicated to Crown. Calculated several categories of claimed damages: increased shipping costs for GoPlus products that were diverted from the Georgia warehouse to other GoPlus warehouses, increased labor expenses at the Georgia warehouse, and direct and indirect costs associated with replacing the defective shelving. Submitted an expert report. (2021)

- ***Woodard-CM, LLC v. Sunlord Leisure Products, Inc. d/b/a Patio Renaissance, Prestige International Investments Co., Ltd., Albert Lord f/k/a Ai Ping Luo, Sunrise Casual Furniture, Inc., Mark Gorr, Gorr & Associates, Inc., Justin Pfhal, and Phafl Enterprises, Inc.***
US District Court, Southern District of Florida, Miami Division, Case No. 1:20-cv-23104-KMW
 Retained as an economic expert to rebut Woodard's claimed lost profits damages and disgorgement of the defendants' profits resulting from the breach of a settlement agreement entered into after a trademark infringement lawsuit Woodard filed against Sunlord. Woodard alleged that Sunlord and affiliated companies violated the settlement agreement by selling certain patio furniture products alleged to be substantially similar to Woodard's own product designs. Submitted an expert report. (2021)
- ***Acute Medical Services, LLC v. Christian EMS d/b/a North Texas Regional EMS, Jason Jones and James Lampe***
16th Judicial District, Denton County, Texas, Cause No. 16-06836-16
 Retained as an economic expert for NTREMS, an emergency medical services company. NTREMS's former management team members were alleged to have misappropriated trade secrets, including client lists, in order to establish NTREMS to directly compete with the plaintiff. Evaluated the plaintiff's claimed lost profits and disgorgement of NTREMS's revenues and profits attributable to the alleged theft of trade secrets. Submitted an expert designation. (2021)
- ***Juli Forde v. Nicka & Associates, Inc. and Greg Nicka***
429th Judicial District, Collin County, Texas, Cause No. 429-00062-2019
 Retained as an economic expert for a medical coding company to evaluate the plaintiff's claim as to the value of her alleged 5% ownership interest in the company and the plaintiff's calculation of claimed unpaid commissions. Submitted an expert report. (2020)
- ***California Expanded Metal Products Company and ClarkDietrich Building Systems v. James Klein, BlazeFrame Industries, Ltd., and Safti-Seal, Inc.***
US District Court, Western District of Washington, Civil Action No. 2:18-cv-00659-JLR
 Retained as an economic expert for CEMCO (owner of the asserted patents) and ClarkDietrich (exclusive licensee of the asserted patents) to evaluate the plaintiffs' damages resulting from the defendants' infringement of patents related to head-of-wall fire blocking assemblies used in building construction and breach of a license agreement. Evaluated the plaintiffs' lost profits and reasonable royalty damages. Submitted an expert report and provided deposition testimony. (2019)

SELECTED CONSULTING ENGAGEMENTS

Intellectual Property: Patent Infringement

- Assisted in the evaluation of claimed damages of a water balloon manufacturer who brought suit against a competitor. The competitor started selling the third generation of allegedly infringing products after

the first two generations of products were subject to injunctions. Evaluated lost profits damages and reasonable royalty damages in the alternative. Evaluated price erosion damages on the sales that would have been made absent the alleged infringement as well as the sales that were actually made while market prices were influenced by the alleged infringement. Also assessed the plaintiff's claimed damages as a result of the defendant's false advertising of its products.

- Assisted in evaluating from an economic perspective whether a permanent injunction was warranted in a patent infringement lawsuit between two competitors in three-dimensional, machine vision-based railroad tie inspection services. Evaluated whether the plaintiff was likely to suffer significant and long-term economic injury for which monetary damages were inadequate. Determined the plaintiff's claimed lost profits from the projects that had been lost to the defendant.
- Assisted in an economic analysis to determine whether a permanent injunction was appropriate in a patent infringement matter related to the use of drag-reducing agents in heavy crude oil to facilitate the transportation of heavy crude oil through pipelines. Performed assessments of irreparable economic injury, inadequacy of monetary remedies, and balance of hardships under the *eBay* framework. Evaluated a monetary remedy due to the plaintiff absent an injunction.
- Participated in evaluating damages claimed by the plaintiff as a result of the alleged patent infringement by seven defendants regarding a technology that claims to protect Linux-based servers against certain types of denial-of-service attacks. Evaluated the negotiating positions of the plaintiff and the defendants, including factors common across the defendants as well as factors specific to each defendant. Analyses included determining the costs incurred by each defendant associated with implementing non-infringing alternatives. Assisted in evaluating the plaintiff's damages expert report with regard to the claimed royalty payment structure, claimed royalty base, claimed royalty rate, and reasonableness checks performed by the opposing expert.
- Assisted in the evaluation of claimed reasonable royalty damages in a patent infringement matter in which a major e-commerce retailer was accused of infringing patents related to sales force automation by offering automated online product recommendations. Analyses demonstrated that the plaintiffs' damages and marketing experts overstated the defendant's revenues allegedly attributable to the accused recommendation features. Further demonstrated that the plaintiffs' damages expert opined to an incorrect royalty payment structure and overstated the claimed royalty rate.
- Assisted in economic analyses related to the amount to be paid by an enterprise resource planning software company for violating an injunction order prohibiting licensing or servicing of procurement software products that infringed the plaintiff's patent. Analyses included an assessment of the defendant's gains from failing to comply with the injunction. Assisted in evaluating analyses proffered by the defendant's rebuttal damages expert, including rebutting a reasonable royalty analysis and analyses of the appropriate profit margin to be used for disgorgement purposes.
- The plaintiff, a manufacturer of hunting products, sued another manufacturer for the alleged infringement of two patents regarding spinning wing duck decoys. Assisted in evaluating the plaintiff's lost profits, reasonable royalty, and future damages. Analyses included evaluating the *Panduit* conditions, determining the products the plaintiff would have sold in the absence of the alleged infringement, deriving the plaintiff's adjusted market share, determining incremental profitability, and calculating lost profits on lost unit sales. In addition to the patent infringement claims, the plaintiff

asserted that defendant falsely marked its products with expired patents. Evaluated the number of false marking-related offenses based upon different scenarios.

- A major search/content provider was alleged to infringe a patent related to a certain method of bid management used in paid search engines. Assisted in performing research regarding the evolution of sponsored search auctions; evaluating the defendant's license agreements related to online advertising technology and their comparability to the hypothetical license in this case; analyzing the indicators of value for the patent-in-suit (such as licensing offers and the plaintiff's sale of membership interest); and assessing the defendant's own innovations regarding its sponsored search business model.
- A major manufacturer of portable digital music and video players was alleged to infringe two patents related to the playlist and podcast features. Assisted in evaluating the plaintiff's apportionment of the claimed operating profits associated with the accused products to the accused features, including assessing the applicability of various survey results and performing reasonableness tests. Constructed the negotiating positions in a hypothetical licensor/licensee negotiation, including the plaintiff's sale attempts regarding the patents-in-suit, the factors contributing to the commercial success of the accused products unrelated to the patents-in-suit, the incremental benefits of the patents-in-suit over existing technologies, and the product risks and economic uncertainty at the time of the hypothetical negotiation.
- Assisted in evaluating the plaintiff's royalty damages claim against three automobile manufacturers related to two patents that allegedly cover the integration of portable electronic devices (e.g., MP3 players) to a vehicle's sound system. Analyzed company-specific and iPod interface-related license agreements, determined the purchase costs of allegedly infringing vehicle components, and evaluated industry surveys regarding iPod integration. Developed alternative damages estimates under various findings by the trier of fact.
- In a patent infringement matter related to the initiation of virtual private networks, participated in the evaluation of claimed royalty damages asserted against a major software manufacturer for allegedly incorporating the patented technology into its software applications. Analyzed valuations of the patented technology around the time of the hypothetical negotiation, the drivers of demand for the software applications allegedly embodying the patents-in-suit, and the parties' patent licensing approaches. Analyzed the three factors outlined in *Cornell University v. Hewlett-Packard* to determine if the application of the entire market value rule would be warranted. Analyzed the four factors enumerated in *eBay Inc. v. MercExchange* to determine if an injunction against the accused products would be warranted.
- Participated in evaluating damages claimed by the plaintiff as a result of the alleged patent infringement by three defendants (i.e., two major banks and an information technology outsourcing company) of a technology related to check imaging, processing, and storage. Assisted in the development of an alternative damages estimate based on analysis of the plaintiff's financial performance and commercialization efforts around the time of the hypothetical negotiation, the defendants' investments and net benefits associated with image enablement, the respective economic contributions of the parties to the successful commercialization of the accused instrumentalities, and the *Georgia-Pacific* factors. Determined the costs associated with implementing non-infringing alternatives.
- The plaintiff, the owner of a patent related to a technology involving a tire pressure monitoring system (TPMS), sued two automobile manufacturers for alleged patent infringement. Evaluated the claimed

historical and future reasonable royalty damages presented by the opposing expert. One of the factors at issue was the federal mandate for vehicles to use TPMS and customer demand for TPMS prior to the federal mandate. Assessed the royalty payment structure proffered by the plaintiff in light of the variations in TPMS purchase costs and the licensing approach generally used in the automobile industry. Analyzed numerous license agreements produced by the defendants in the case.

- A medical device manufacturer brought suit against three medical device manufacturers and a supplier for the alleged infringement of a technology related to blood glucose monitoring devices. Performed incremental profitability analysis, analyzed sales and market share data, and conducted market and industry research. Conducted *Panduit* factor analysis and *Georgia-Pacific* factor analysis. Calculated lost profits and reasonable royalty damages suffered by the plaintiff under different infringement findings.
- Assisted in the evaluation of reasonable royalty damages in a patent infringement matter involving flash drive technology. Analysis included market research, review of license agreements, and calculation of accused product sales under various potential damages scenarios. Assisted in *Georgia-Pacific* factor analysis and determination of important negotiating positions in a hypothetical licensor/licensee negotiation.
- Assisted in evaluating damages suffered by the plaintiff as a result of the alleged infringement of the defendant related to a technology concerning status feedback in home lighting control systems. Analyzed various surveys of home lighting control system manufacturers, dealers, and end users. Used these surveys as inputs into the derivation of alleged infringing sales and market share data. Analyzed the plaintiff's competitors, pricing patterns, productive capacity, and geographic coverage in support of the lost profits claim. Performed data analysis on a large database consisting of sales orders of accused products, identified ancillary sales, and calculated lost profits and royalty damages under multiple potential damages scenarios.
- Assisted in the evaluation of the plaintiff's lost profits and reasonable royalty damages related to DVR technology. Analysis included an assessment of the plaintiff's sales of DVR products and subscriptions in the absence of the infringement during the stay of the permanent injunction. Performed an incremental revenue and cost analysis. Assisted in the determination of a post-verdict royalty rate based upon the evidence and arguments found material to the granting of the injunction and the change in the parties' bargaining positions. Also assisted in the evaluation of the damages the plaintiff sustained from the defendant's failure to comply with the court-mandated injunction.
- The plaintiff, the holder of a patent concerning six-degree-of-freedom control technology in the video game industry, sued a major video game system manufacturer for the alleged infringement of its patent. Assisted in the evaluation of the plaintiff's claimed reasonable royalty damages. Conducted market and industry research, performed *Georgia-Pacific* factor analysis, evaluated the plaintiff's royalty damages analysis, and provided an alternative royalty damages analysis. Also assisted in the evaluation of a post-trial reasonable royalty rate.

Intellectual Property: Commercial Success

- Assisted in preparing a rebuttal declaration to the US Patent and Trademark Office related to the commercial success of intrusion prevention systems (IPS) asserted to practice a patent undergoing an



inter partes reexamination. Analyses included evaluating the features not claimed by the patent at issue and the economic factors that contribute to the commercial success of stand-alone IPS products.

- In a matter involving patents that relate to a conversational user interface, evaluate the marketplace success of the relevant products and the nexus between the patents-in-suit and the commercial success.
- Led a team that evaluated the secondary considerations of commercial success and licensing as they relate to the claimed non-obviousness of several patents involving dual-activity technology used in drilling rigs.
- Led a team that evaluated whether the commercial success of a COVID-19 vaccine has a discernible nexus to certain asserted patents and the economic implications of the licensing activities related to the asserted patents.

Intellectual Property: Trademark Infringement

- Assisted in quantifying economic damages due to the plaintiff in a trademark infringement matter, including the defendant's sales and profits attributable to the wrongful conduct and the plaintiff's corrective advertising expenses to address confusion caused by the trademark infringement.
- Worked with the defendants in a trademark and unfair competition litigation involving transcatheter prosthetic heart valve products. Assisted in the evaluation of claimed damages quantified under different approaches: loss of goodwill and harm to reputation, corrective advertising, and the defendant's sales.

Intellectual Property: Trade Secrets Misappropriation

- The plaintiff claimed that the defendant, a competitor in aerospace extrusion manufacturing, misappropriated certain trade secrets related to the process of manufacturing stretch form spar chords used in constructing wings of airplanes. Assisted in the evaluation of the plaintiff's claimed monetary remedies: lost profits damages associated with lost sales to a major customer, price erosion damages on retained sales, unjust enrichment, and reasonable royalty damages.
- A mortgage origination company alleged that two former employees breached the non-solicitation provisions in their employment agreements and induced dozens of employees to join a competing company. Assisted in quantifying appropriate damages and/or remedies that compensate the plaintiff for the alleged breaches of contract, wrongful solicitation of employees, misappropriation of confidential consumer loan data, and other legal theories.

Intellectual Property: Copyright Infringement

- In a suit brought by a software development and consulting company against a health care technology company for alleged copyright infringement, evaluated the plaintiff's lost profits from the defendant's reverse engineering and disgorgement of the defendant's profits associated with usage of plaintiff's software. Supervised a team of professionals in analyzing numerous software licensing contracts between the plaintiff and its customers as benchmarks to evaluate the reasonableness of the plaintiff's contract with the defendant in the absence of the alleged wrongful conduct. Utilized a number of pricing

options that were offered by the plaintiff to the defendant to determine the plaintiff's lost maintenance and consulting revenues.

- In a lawsuit between two competitors in online resume building services, evaluate plaintiff's claimed damages resulting from defendant's alleged copyright infringement with regard to job descriptions. Evaluate calculations of plaintiff's lost profits, defendant's head start benefits in avoided cost and time to independently develop comparable content, and defendant's profits from the infringing services.

Intellectual Property: Trade Dress Infringement

- Assisted in the evaluation of compensatory damages suffered by a major mattress manufacturer due to a rival's alleged infringement of its trade dress and design patents. Analyses demonstrated a causal connection between the defendant's alleged infringement and the plaintiff's lost sales and lost profits. Analyses included an assessment of the defendant's profits earned through the infringement and an evaluation of the plaintiff's lost profits and reasonable royalty damages.

Antitrust

- Work with a manufacturer of single-serve brewers and coffee pods in antitrust litigation filed by two competitors, a distributor, direct purchasers, and indirect purchasers. The alleged anticompetitive practices include monopoly leveraging, exclusionary conduct, illegal tying, abuse of market power, among other categories of claims. Led a case team in evaluating claimed damages, including alleged overcharges and lost profits damages from lost sales and increased costs of production.
- The plaintiff, a major airline, sued a travel technology company that operates a global distribution system (GDS) for allegedly anticompetitive behavior related to the provision of booking services to travel agencies. Led a case team in evaluating multiple components of the plaintiff's damages claim, including claimed lost profits resulting from the defendant's actions to allegedly impede the rollout of a competing technology for booking services, contractual restrictions that prevent the airline from offering targeted discounts to price sensitive customers, allegedly retaliatory booking fee increases, and the biasing of computer screens of travel agencies. Demonstrated the flaws in the plaintiff's claimed damages models.
- Assisted in evaluating the plaintiff's economic liability arguments an antitrust matter regarding the plaintiff's claim that the defendant monopolized or attempted to monopolize the business of manufacturing, selling, and distributing magnetic brakes, components for magnetic brakes, and magnetic braking systems for amusement park rides. Also assisted in evaluating claimed antitrust damages, including assumptions underlying the opposing expert's damages model and the economic causal connection between the alleged wrongful conduct and claimed losses.

Breach of Contract

- Assisted in evaluating economic damages suffered by a global distribution system operator as a result of a major airline company's breach of the confidentiality provision in its distribution agreement. At issue was the defendant's disclosure of confidential pricing information during the plaintiff's contract negotiations with other major airline customers. Analyses included evaluating the impact of the defendant's disclosure on pricing and other terms negotiated in the affected contracts. Assisted in determining the plaintiff's lost revenues and lost profits due to the defendant's disclosure.

- In a breach of contract matter involving alleged improper use of confidential information, performed an evaluation of the plaintiff's claimed lost income calculation and lost corporate value calculation. Evaluated the claimed comparable company used in the market approach for assessing corporate value.
- Assisted in the evaluation of the plaintiff's economic damages arising from the alleged wrongful termination of a workers' compensation insurance contract. The plaintiff – a provider of integrated workers' compensation insurance and payroll services – contended that its fronting company's alleged wrongful termination of a Managing General Agency Agreement negatively affected its ability to underwrite new business, causing harm to its revenues and business value. Assisted in the development of two approaches to quantify damages: a lost profits approach and a valuation approach. Under the lost profits approach, analyses included conducting research of the workers' compensation insurance market and insurance premium rate trend in California, analyzing customer retention data, and determining the plaintiff's lost profits from lost customers. Under the valuation approach, analyses included identifying comparable companies, evaluating selected financial variables for the relevant comparable companies, and assessing the plaintiff's value in the absence of the defendant's alleged wrongful conduct and comparing it to the plaintiff's actual value.
- Assisted in evaluating the plaintiff's damages claim in a breach of contract matter related to the alleged disruption of a direct-response television campaign. The plaintiff, a golf equipment manufacturing company, claimed that the reserve requirement in a merchant credit card processing contract prevented it from continuing its marketing and advertising objectives. Analysis of various financial metrics and trends demonstrated that the plaintiff's expert failed to take into account alternative reasons for the plaintiff's declining financial performance. Analyses included evaluating the life cycle of direct response television and assessing the growth of comparable golf equipment manufacturing companies during the claimed damage period.

Class Certification / False Advertising

- Assisted in evaluating claimed injury and damages in a class action matter involving 5-hour Energy products. The plaintiffs alleged that the products are misleadingly marketed as providing (five) hours of energy and containing "beneficial ingredients." Performed analyses to demonstrate the lack of an economic causal link between the challenged claims and economic injury as asserted by the plaintiffs given (a) substantial repeat purchasing activity, (b) a variety of factors influencing purchasing decision, (c) varying beliefs regarding the challenged claims, and (d) significant variation in actual prices paid for the products. Demonstrated that the plaintiffs' claimed "energy underfill" damages did not have an appropriate nexus to the challenged claims and did not adequately account for the value that putative class members received from the challenged products. Class certification was denied.
- The plaintiffs alleged to have paid a premium for Monster energy drinks as a result of various allegedly misleading on-label statements. Assisted in performing analyses to show the lack of a market-determined price premium, including showing that there was no discernible decrease in wholesale and retail prices of the challenged products following the removal of certain claims at issue. Evaluated the plaintiffs' conjoint survey from an economic perspective and found that the conjoint survey yields willingness-to-pay values that are unreasonably high relative to actual market prices of the challenged products. Class certification was denied.
- In a putative class action lawsuit, a beverages company was alleged to have misled consumers and caused them economic injury by marketing certain beverages as "all natural" when they contained high-

fructose corn syrup. Assisted in evaluating the plaintiffs' position that standard economic analyses could be employed to quantify the alleged economic injury on a class-wide basis. Performed analyses of Nielsen retail sales data and demonstrated that wide variations existed in the beverages' retail prices across distribution outlets, across geographic areas, and across the time periods considered. Also demonstrated that promotional discounts and coupons significantly impact the actual prices paid by the putative class members. Reviewed product and marketing materials and assisted in the identification of benchmark products. A comparison of the average retail prices of the "all natural" beverages to identified benchmark products did not provide economic evidence that the "all natural" beverages possessed a systematic price premium as a result of the "all natural" labeling. Class certification was denied.

- Led a case team in evaluating the plaintiffs' use of a conjoint analysis and a hedonic regression to calculation claimed price premium in a consumer class action matter involving ovens equipped with a self-cleaning feature. Class certification was denied, citing reasons consistent with the team's analyses that the plaintiffs' conjoint analysis failed to adequately address supply-side considerations and the plaintiffs' regression could not economically isolate the price impact of the challenged feature from certain non-challenged features and benefits of at-issue ovens.
- Assisted in evaluating the plaintiffs' position that the alleged economic injury suffered by putative class members could be quantified on a class-wide basis for claimed false advertising related to label statements that sunscreen ingredients were naturally sourced. Analyses demonstrated that the plaintiffs' expert's proposed hedonic regression model used an improperly defined market, miscategorized relevant product claims, and used an incomplete list of relevant control attributes for sunscreen products. Analyses further demonstrated that the plaintiffs' proposed damages models could not isolate a claimed price premium attributable to the alleged wrongful conduct from a price premium that may have existed for a correct interpretation of the challenged label statements. Class certification was denied.
- Assisted in evaluating the plaintiffs' position that the claimed economic injury suffered by putative class members could be quantified on a class-wide basis for claimed under-filling of canned tuna products. Analyses of the plaintiffs' historical testing records over the putative class period demonstrated both the lack of under-filling in numerous testing samples from the putative class period, as well as variation in the amount of under-filling in particular testing samples from the putative class period, demonstrating the lack of economic injury and the lack of ability to quantify economic injury using common proof.
- Assisted in evaluating the plaintiffs' position that claimed economic injury suffered by putative class members could be quantified on a class-wide basis for claimed false advertising related to label statements on baby shampoo products claiming to use a natural oat formula. Assisted in performing before-and-after comparisons and benchmark product comparisons to demonstrate the likely lack of claimed price premiums associated with the challenged claims. Also assisted in evaluating the plaintiffs' damages expert's proposed hedonic regression. Analyses demonstrated that the proposed regression suffered from numerous flaws, including miscategorization of relevant product attributes, omission of relevant product attributes, and incomplete or inaccurate data.
- Assisted in evaluating the plaintiffs' position that the claimed economic injury suffered by putative class members could be quantified on a class-wide basis in a matter related to anti-aging skin care

products marketed as preventing and repairing signs of aging “in just one week.” Assisted in demonstrating that the approaches proposed by the opposing expert to calculate class-wide damages would not yield reliable or relevant estimates of the alleged harm suffered by individual putative class members. Arguments presented included that the large number of repeat buyers, the wide variations in the retail prices associated with the accused products, and the wide variations in the retail price differences relative to other anti-aging products would prevent a reliable calculation of putative class members’ damages on a class-wide basis. Class certification was denied.

- In a putative class action lawsuit involving a food company, three products are alleged to be mislabeled: cooking sprays, canned tomato products, and hot cocoa products. Assisted in evaluating the common proof approaches proposed by the opposing expert to calculate a class-wide monetary recovery, including restitution, restitutionary disgorgement, benefit of the bargain rule, and proportion of sales allegedly attributable to challenged claims. Assisted in demonstrating that calculation of monetary recovery for putative class members absent individualized analyses into (a) reasons for purchase, (b) the specific prices paid for the Challenged Products, (c) the specific prices of the alternative products, and (d) whether the Challenged Product purchased bore the Challenged Claims would not be reliable from an economic perspective. Class certification was denied.
- Assisted in evaluating the plaintiff’s position that the claimed economic injury suffered by putative class members could be quantified on a class-wide basis in a matter related to margarita products marketed as “all natural” when they contained the preservative sodium benzoate. Assisted in demonstrating that the “price premium” approach proposed by the opposing expert to calculate class-wide damages would not yield a reliable or relevant estimate of the alleged harm suffered by individual putative class members. Arguments presented included that the wide variations in the retail prices associated with the accused products, variations in putative class members’ reasons for purchase, and variations in putative class members’ opinions regarding sodium benzoate would prevent a reliable calculation of putative class members’ damages on a class-wide basis. Class certification was denied.
- Assisted in evaluating the plaintiffs’ position that the claimed economic injury allegedly suffered by putative class members could be quantified on a class-wide basis in a matter related to the issuance of a special assessment fee by a timeshare vacation club. Assisted in demonstrating that potential damages-related conflicts were likely to arise among putative class members (including among the named plaintiffs) – making class-wide proof an unreliable measure of economic injury for each putative class member. Also assisted in demonstrating that evaluating claimed damages on a class-wide basis would result in potentially awarding damages to putative class members who suffered no injury.
- **Other matters:** Evaluated the plaintiffs’ position that the economic injury allegedly suffered by putative class members could be quantified on a class-wide basis in class action lawsuits involving other consumer products, including (a) antibacterial hand soaps, (b) automobiles, (c) cereals, (d) colon health probiotic capsules, (e) orange juice products, (f) soft drinks, (g) pest control solutions, (h) complimentary services associated with eyeglass purchases, (i) tires, and (j) wet wipes.

Loss of Earnings

- Evaluated the plaintiffs’ claim that the alleged wrongful conduct of the defendants caused the plaintiffs to lose their medical privileges in pediatric neurosurgery at a hospital and sustain past and future

reduction in earnings. Analyzed financial data of the doctors' medical practice, the earnings life cycle of physicians, and other potentially mitigating factors.

- Evaluated the claimed lost earnings suffered by a cardiologist as a result of the alleged wrongful termination of his privileges at a hospital. Analysis included evaluating the revenue growth of the plaintiff's medical practice relative to claimed lost earnings, preparing critiques of the plaintiff's expert's lost earnings damages model, and calculating alternative damages figures.

PRESENTATIONS / PUBLICATIONS

"Tying Damages to Theory of Liability in Price-Premium Class Actions" (as part of "Consumer Class Action Litigation: Tips & Strategies for Your Firm in 2020 and Beyond" panel), The Knowledge Group, September 15, 2020

"Overview of Damages from Violation of Non-Compete Agreements and Trade Secret Misappropriation" (as part of "Protecting Trade Secrets and Company Assets with Non-Compete" panel), The Knowledge Group, February 21, 2023

"Trade Secret Disputes: Quantifying Damages," with John Browning, Della Cummings, Tom McGahee, and Mickey Ferri, *Corporate Disputes*, Jul.-Sep. 2024

HONORS

IAM Patent 1000: The World's Leading Patent Professionals, 2021, 2022, 2023, 2024

Elie Wiesel Prize In Ethics Essay Contest, Third Prize, 2000

Johns Hopkins University, Institute for Policy Studies, Essay Contest on Citizenship, Second Prize, 1999

Expert Testimony List of Minh P. Doan

No.	Matter (Client Bolded)	Year	Court	Deposition	Trial	Type
1	PetConnect Rescue, Inc. et al. v. Pet Connect Rescue, Inc., David Salinas, et al. Civil Action No. 3:20-cv-005277-H-KSC	2024	U.S. District Court, Southern District of California (Judge: Robert Huie)		X	Disgorgement of defendants' profits attributable to trademark infringement
2	NuVasive, Inc. v. Patrick Miles and Alphatec Holdings, Inc. Case No. 2017-0720-SG	2023	Court of Chancery of the State of Delaware (Judge: Sam Glasscock III)	X	X	Evaluation of (a) claimed economic benefit from alleged breach of fiduciary duties and (b) claimed lost profits from inducement of sales distributors to breach contractual agreements with NuVasive
3	Alphatec Spine, Inc. v. NuVasive, Inc. Lead Case No. 37-2017-00038583-CU-BC-CTL	2023-2024	Superior Court of the State of California, County of San Diego, Central (Judge: Richard Whitney)	X	X	Evaluation of claimed lost profits damages and fair market value impact from Alphatec's alleged unfair practices in hiring sales representatives that formerly worked at NuVasive
4	C.R. Bard, Inc. v. Atrium Medical Corp. Case No. 21-00284-PHX-DGC	2022	US District Court, District of Arizona	X		Calculation of unpaid royalties; evaluation of claimed damages under breach of contract and fraudulent misrepresentation counterclaims
5	California Expanded Metal Products Company and ClarkDietrich Building Systems v. James Klein, BlazeFrame Industries, Ltd., and Safti-Seal, Inc. Case No. C18-0659JLR	2022	U.S. District Court, Western District of Washington	X		Damages due to contempt of an injunction and breach of a settlement agreement
6	Estate of Brioux Dash, et al., v. United States of America. Case No. 22-80015-CIV-DMM	2022	U.S. District Court, Northern District of Florida	X		Wrongful death economic damages
7	Ryan Struck v. 3M Company , et al. Case No. 3:19-md-2885	2022	U.S. District Court, Northern District of Florida	X		Personal injury economic damages
8	Wesley Norton v. 3M Company , et al. Case No. 3:19-md-2886	2022	U.S. District Court, Northern District of Florida	X		Personal injury economic damages
9	GCP Applied Technology Inc. v. AVM Industries, Inc. Case No. 2:19-cv-07475-MWF-FFM	2021	U.S. District Court, Central District of California	X		Patent infringement damages
10	California Expanded Metal Products Company and ClarkDietrich Building Systems v. James Klein, BlazeFrame Industries, Ltd., and Safti-Seal, Inc. Civil Action No. 2:18-cv-00659-JLR	2019	U.S. District Court, Western District of Washington	X		Patent infringement damages

Appendix B



Appendix B

Information Reviewed and Considered

Description

IPR Pleadings 2024-00178 ('291 Patent)

2023-11-10 Paper 1 291 Petition for Inter Partes Review (Caveney_Carr)

2023-11-10 Paper 2 IPR2024-00178 (291) Petitioner Owners Power of Attorney

2023-11-10 Paper 3 291 Petitioners Explanation of Multiple Petitions

2023-11-15 Paper 4 IPR2024-00178 Notice of Filing Date Accorded to Petition

2023-11-17 Paper 5 Unopposed Motion of AWM for PHV of Andrew DeVoogd

2023-11-17 Paper 6 Unopposed Motion of AWM for PHV of Robert Sweeney

2023-11-21 Paper 7 Patent Owners Mandatory Notices, 11-21-2023, IPR2024-00178

2023-11-21 Paper 8 Patent Owners Power of Attorney, 11-21-2023, IPR2024-00178

2023-12-06 Paper 9 Petitioners Updated Mandatory Notices

2023-12-08 Paper 10 Patent Owners Motion for Admission PHV (E. Flynn)

2024-01-16 Paper 11 IPR2024-00178 291 Unopposed Motion Withdrawal of lead counsel

2024-01-16 Paper 12 IPR2024-00178 291 Petitioner Updated Mandatory Notices substitute lead counsel

2024-01-16 Paper 13 IPR2024-00178 (291) Petitioner Updated Power of Attorney (Caveney_Carr)

2024-02-08 Paper 14 Order Granting Motion to Withdraw and Sub Lead Counsel

2024-02-15 Paper 15 [IPR2024-00178] POs Preliminary Response

2024-02-15 Paper 16 [IPR2024-00178] Patent Owners Response to Explanation of Multiple Petitions

2024-04-24 Paper 17 [IPR2024-00178] Decision Granting Institution (291 Patent)

2024-04-24 Paper 18 [IPR2024-00178] Scheduling Order (291 Patent)

2024-04-26 [IPR2024-00178] Paper 19 Order Granting POs Motions for PHV

2024-04-26 [IPR2024-00178] Paper 20 Order Granting Petitioners PHV Motions

2024-04-30 Paper 21 [IPR2024-00178] Patent Owners Updated Power of Attorney

2024-05-01 Paper 22 IPR2024-00178 (291) Petitioner Updated Power of Attorney

2024-05-01 Paper 23 IPR2024-00178 (291) Petitioner Updated Mandatory Notices

2024-05-14 Paper 24 IPR2024-00178 Patent Owners Updated Mandatory Notices

2024-05-23 Paper 25 IPR2024-00178 Notice of Stipulation to Extend Scheduling Order Due Dates

2024-06-21 Paper 26 Patent Owners Notice of Cross Examination of Omid Beik, Ph.D.

Appendix B

Information Reviewed and Considered

Description

2024-07-01 Paper 27 IPR2024-00178 291 Unopposed Motion to Withdrawal D. DeVoogd

2024-07-01 Paper 28 IPR2024-00178 291 Petitioners Updated Mandatory Notices

2024-07-02 Paper 29 IPR2024-00178 291 Unopposed Motion for Pro Hac Vice Admission of M. Galica

2024-07-23 Paper 30 IPR2024-00178 Motion to Seal and Motion for Entry of Protective Order

2024-07-25 Paper 31 IPR2024-00178 CAB Patent Owners Response (Confidential - Under Seal)

2024-07-25 Paper 32 IPR2024-00178 CAB Patent Owners Response (Public -Redacted)

2024-07-25 Paper 33 IPR2024-00178 Patent Owners Motion to Seal

2024-08-01 Paper 34 IPR2024-00178 291 Petitioner's Objections to Patent Owners Exhibits

2024-08-01 Paper 34 IPR2024-00178 291 Petitioners Objections to Patent Owners Exhibits (2)

2024-08-13 Paper 35 IPR2024-00178 291 Petitioners Motion to Strike

2024-08-16 Paper 36 IPR2024-00178 Order Granting POs Motion to Seal and Motion for entry of Protective Order

2024-08-20 Paper 37 IPR2024-00178 Patent Owners Opposition to Petitioners Motion to Strike(117417815)

2024-08-30 Paper 38 Patent Owners Notice of Service of Supplemental Evidence

EX 2001 Declaration of Edward C. Kern, Jr., Ph.D., dated February 15, 2024

EX 2002 - US5740994

EX 2003 Petitioners' Invalidity Contentions

EX1001 - US11349291

EX1002 - Declaration of Omid Beik, Ph.D., dated November 10, 2023

EX1003 - US7520476

EX1004 - US2010/0139731

EX1005 - US2384440

EX1007 - Safety Requirements for Wiring Systems and Connectors for Photovoltaic Systems

EX1008 - Solar Snake Tray Announces New Cable Tray That Attaches to Messenger Wire Rope for Solar Installations

EX1009 - National Electrical Code, 2008 Edition

EX1010 - Technical Manual, Facilities Engineering - Electrical Exterior Facilities, Departments of the Army, the Navy, and the Air Force, dated November 29, 1996

EX1011 - PV Array Wire Management, SolarPro

EX1012 - US1841479

Appendix B

Information Reviewed and Considered

Description

EX1013 - US2820083

EX1014 - Cable spacers solve problem of many cables and not much pole space, Windpower Engineering

EX1015 - Utility Patent Application Transmittal

EX1016 - 2012 NECA Convention Presentation

EX1017 - Electric Energy T&D Magazine, May-June 2012 Issue 3, Volume 3

EX1018 - An In-depth Analysis for Optimal Cable Tray Support Span

EX1019 - IEEE Recommended Practice for Grounding of Industrial and Commercial Power Systems

EX1020 - National Electrical Safety Code Committee, Accredited Standards Committee C2 National Electrical Safety Code Interpretation

EX1021 - NEMA - New Cable Tie "Type" Classifications

EX1022 - IEEE Guide for the Design and Installation of Cable Systems in Substations

EX1023 - IEEE Recommended Practice for Cable Installation in Generating Stations and Industrial Facilities

EX1025 - Declaration of A. DeVoogd ISO dated November 17, 2023

EX1026 - Declaration of Robert C. Sweeney dated November 17, 2023

EX1027 - Declaration of Matthew S. Galica dated July 2, 2024

EX1034 - Capital Dynamics, First Solar Celebrate Commissioning of the 280 MWac California Flats Solar Project

EX1035 - The following CAB Products are protected by U.S. Patents

EX1037 - Cambria County Association for the Blind & Handicapped Brochure

EX1056 - Utility-Scale Solar, 2023 Edition

EX1057 - Solar Market Insight Report 2018 Year In Review

EX1058 - World's largest solar farm is up and running in California

EX1059 - Utility-Scale Solar: Technology Trends, 2007-2023

EX2004 Deposition Transcript of Omid Beik, Volume 1, dated July 9, 2024

EX2005 Wind and Solar Power Systems, Third Edition

EX2006 Declaration of Allen Garrett Smith In Support of Patent Owner's Response dated July 23, 2024

EX2007 CAB Cable Rings & Saddles for Solar Panel Wiring Brochure

EX2008 Sunpower Field Process Change Review 1: Development Review Presentation

EX2009 Inter Solar Award 2001 Finalist: Photovoltaics

Appendix B

Information Reviewed and Considered

Description

EX2010 April 7, 2015 Email from Mitch Bowman to Allen Smith regarding CAB Solutions Dielectric Strength Testing

EX2011 April 10, 2015 Email from Allen Smith to Mitch Bowman regarding CAB Solutions PVC Coating with Attachments

EX2012 July 2, 2015 Email from Mitch Bowman to Tim Wedding, et al. regarding CAB Mechanical Design Guide 6-26-15.pptx

EX2013 September 15, 2015 Email from Terry Moore to Timothy Wedding regarding First Solar RFQ - Wire Management

EX2014 September 21, 2015 Email from Allen Smith to smurphy@firstsolar.com regarding CAB Cable Management Product Line

EX2015 October 2, 2015 Email from Allen Smith to smurphy@firstsolar.com regarding First Solar RFQ - Wire Management

EX2016 "50 Array-Changing Technologies," PV Magazine Article

EX2017 January 18, 2016 Email from Anthony Coker to Dana Clare Redden regarding Anthony Please Meet Allen Smith

EX2018 "eBOX Optimization: Aerial Cable Support Systems," SolarPro Article, July/August 2016

EX2019 May 20, 2016 Email from John Giardino to Timothy Wedding regarding CAB System Questions

EX2020 RPCS, Array Technologies, CAB Solar, and EBoS Leader Shoals Technologies Group Partner to Bring Streamlined Approach to Solar Project Installations by RP Construction Services dated July 26, 2018

EX2021 2018 NECA Show Stopper: CAB Solar Integrated Grounding Cable Management Award

EX2022 "2018 NECA Show Stopper Winners," www.ecmag.com Article, January 2019

EX2023 2019 Top Solar Component Products (solarpowerworldonline.com)

EX2024 "2021 Top Solar Components and Equipment," Solar Power World

EX2025 PV Magazine, January 2022

EX2026 "Congratulations 2022 Leadership in Solar Energy," solarpowerworldonline.com List

EX2027 "Congratulations 2023 Leadership in Solar Energy," solarpowerworldonline.com List

EX2028 Declaration of Mitchel F. Bowman In Support of Patent Owner's Response dated July 24, 2024

EX2029 Mitchel F. Bowman CV

EX2030 CAB Prototyping at Solar Tac, 6/25/14-6/27/14 Presentation by SunEdison

EX2031 November 14, 2014 Email from Tim Wedding to Mitch Bowman regarding SunEdison CAB Contact

EX2032 August 17, 2015 Email from Mark Cooper to Various regarding Two Items from Monthly Technical Review

EX2033 Declaration of William F. Brooks, PE In Support of Patent Owner's Response dated July 23, 2024

EX2034 William F. Brooks, PE CV

EX2035 Solar Market Insight Report: 2023 Year in Review (seia.org)

EX2036 NREL Spring 2024 Solar Industry Update Presentation dated May 14, 2024

Appendix B

Information Reviewed and Considered

Description

EX2037 Cable Management In Solar PV Arrays: A Review of Requirement in the 2017 and 2020 Editions of the National Electrical Code and How CAB Solar Hangers Meet These Requirements
Prepared for Cambria County Association for the Blind and Handicapped by Brooks Engineering

EX2038 Declaration of Edward C. Kern, Jr., Ph.D., dated July 25, 2024

EX2039 Edward C. Kern, jr., Ph.D. Bio

EX2041 CAB Solar Cable Management Installation Guide, Revised 01/28/2022

EX2042 June 19, 2017 Email from Tim Wedding to artur.penedo@aldesa.es regarding Request for Quotation for Client PV Projects Sonnergia

EX2043 Intertek Authorization to Mark Issued August 4, 2023

EX2044 Declaration of Jonathan D. Putnam In Support of Patent Owner's Response dated July 24, 2024

EX2044 Declaration of Jonathan D. Putnam In Support of Patent Owner's Response dated July 24, 2024

EX2045 Jonathan D. Putnam Bio and Expert Testimony

EX2046 CAB Sales Data, 2014 - 2024

EX2047 CAB Comparison of Solar Cable Management Systems

EX2048 Compare CAB® Solar vs. Trenching or Cable Tray Table

EX2049 Cost Comparison of CAB Standard vs New Ground Max Cable Management System

EX2050 July 14, 2017 Email from Timothy Zelkovich to Timothy Wedding regarding Mount Signal 3 Solar - CAB

EX2051 June 20, 2016 Email from Caleb Ward to Tim Wedding regarding Dominion Solar Projects - CAB RFQ

EX2052 Orbital Solar Services Quote Request Form for Project Happy Solar dated 2/21/2022

EX2053 CSI Vendor Sourcing Form for Project Silver Peak dated March 27, 2023

EX2054 Blattner Energy Requisition for Project 861 - Pecan dated 2/7/2018

EX2055 NFPA 70 2014 National Electrical Code

EX2056 CAB Sales Data, 2018

EX2057 Various Schematics

EX2058 Declaration of Denise L. Studinary In Support of Patent Owner's Response dated July 25, 2024

EX2059 Declaration of Joseph William Novak, P.E., MSE, MBA, S.P., In Support of Patent Owner's Response dated July 25, 2024

EX2060 SolarPro Magazine, February/March 2013

IPR Pleadings 2024-00139 ('551 Patent)

2023-11-10 Paper 1 IPR2024-00139 ('551) Petition for Inter Partes Review

2023-11-10 Paper 2 IPR2024-00139 ('551) Petitioner Owner's Power of Attorney

Appendix B

Information Reviewed and Considered

Description

2023-11-15 Paper 3 PR2024-00139 ('551) Notice of Filing Date Accorded to Petition

2023-11-17 Paper 4 Unopposed Motion of AWM for PHV of Andrew H. DeVoogd

2023-11-17 Paper 5 Unopposed Motion of AWM for PHV of Robert C. Sweeney

2023-11-21 Paper 6 Patent Owner's Mandatory Notices, 11-21-2024, IPR2024-00139

2023-11-21 Paper 7 Patent Owner's Power of Attorney, 11-21-2024, IPR2024-00139

2023-12-06 Paper 8 Petitioner's Updated Mandatory Notices

2023-12-08 Paper 9 Patent Owner's Motion for Admission PHV (E. Flynn)

2024-01-16 Paper 10 IPR2024-00139 '551 Unopposed Motion to Withdraw and Substitute Lead Counsel

2024-01-16 Paper 11 IPR2024-00139 '551 Updated Mandatory Notice -replacing lead counsel

2024-01-16 Paper 12 IPR2024-00139 ('551) Petitioner _UPDATED_ Power of Attorney

2024-02-08 Paper 13 2024-02-08 Order Granting Motion to Withdraw and Sub Lead Counsel

2024-02-15 Paper 14 PO's Preliminary Response

2024-03-22 Paper 15 Stipulation re_ Public Availability of Petitioner's Exhibit 1006

2024-04-26 Paper 16 Order Granting PO's PHV Motion

2024-04-26 Paper 17 Order Granting Petitioner's PHV Motion

2024-04-30 Paper 18 Patent Owner's Updated Power of Attorney

2024-05-01 Paper 19 IPR2024-00139 ('551) Petitioner Updated Power of Attorney

2024-05-01 Paper 20 IPR2024-00139 ('551) Petitioner Updated Mandatory Notices

2024-05-13 Paper 21 IPR2024-00139 Institution Decision

2024-05-14 Paper 22 IPR2024-00139 Scheduling Order

2024-05-14 Paper 23 IPR2024-00139 PO's Updated Mandatory Notices

2024-05-23 Paper 24 IPR2024-00139 Notice of Stipulation to Extend Scheduling Order Due Dates

2024-06-21 Paper 25 IPR2024-00139 Patent Owner's Notice of Cross-Examination of Omid Beik, Ph.D.

2024-07-01 Paper 26 IPR2024-00139 Unopposed Motion to Withdraw D. DeVoogd

2024-07-01 Paper 27 IPR2024-00139 '551 Updated Mandatory Notice

2024-07-02 Paper 28 IPR2024-00139 '551 Unopposed Motion for Pro Hac Vice Admission of M. Galica

2024-08-09 Paper 29 IPR2024-00139 CAB Patent Owner Response (IPR2024-00139) (Filed Under Seal)

Appendix B

Information Reviewed and Considered

Description

2024-08-09 Paper 30 IPR2024-00139 CAB Patent Owner Response (IPR2024-00139) (Redacted)

2024-08-09 Paper 31 IPR2024-00139 - Patent Owner's Motion for Entry of A Protective Order and Motion to Seal

2024-08-16 Paper 32 IPR2024-00139 '551 Petitioner's Objections to Patent Owner's Exhibits

EX 2001 Declaration of Joshua Phinney, Ph.D., in Support of Patent Owner's Preliminary Response (signed & incl. CV)

EX 2002 Petitioners' Invalidity Contentions

EX1001 - US10177551

EX1002 - Declaration of Omid Beik, Ph.D., dated November 3, 2023

EX1003 - US10003298 Grushkowitz

EX1004 - US3001749 Petersen

EX1005 - Cab Website - Authenticated

EX1006 - Cab White Paper - Authenticated

EX1007 - NEC NFPA 70-2008 National Electrical Code

EX1008 - Zipse - a_history_of_grounding_and_earthing

EX1009 - US231552

EX1010 - US916306

EX1011 - US2201472

EX1012 - UtilityPoleBook060617

EX1013 - Water and Power Associates

EX1014 - US1464535

EX1015 - US1401998

EX1016 - US1448141

EX1017 - US2917259

EX1018 - US3042351

EX1019 - US3363048

EX1020 - US1754924

EX1021 - US1766873

EX1022 - Applicability of Messenger Wire for Purpose of Lightning Protection

Appendix B

Information Reviewed and Considered

Description

EX1023 - 6TRIPLEX2200-ALU-1021-2 (Triplex Data Sheet, 20212)

EX1024 - Hendrix Spacer Manual from 2013 with Messenger and Hanger references

EX1025 - US20010038738A1

EX1026 - Ex1005 and EX1006 Authentication Page

EX1027 - MACLEAN-POLE-LINE-HARDWARE-CATALOG-2014

EX1028 - IEEE 142-2007

EX1029 - nass-sms,+Sustainable+Marine+Structures-311 (1)

EX1030 - Steel_Distribution_Poles_Case_Study

EX1031 - National Electrical Safety Code

EX1032 - NEC-Advanced Repotrt-1959

EX1033 - Texas_Traffic pole

EX1034 - TN DOT_Messenger wire and thimble eye

EX1035 - PV-Array-Wire-Management-_-SolarPro-Magazine_Feb-March-2013

EX1036 - UEP_Bulletin_1724E-153

EX1037 - 551 File History

EX1038 Declaration of A. DeVoogd ISO dated November 17, 2023

EX1039 Declaration of Robert C. Sweeney dated November 17, 2023

EX1040 Declaration of Matthew S. Galica dated July 2, 2024

EX2004 Deposition Transcript of Omid Beik, Volume 1, dated July 9, 2024

EX2005 Mid-Pier Kit - Various Part Numbers

EX2006 CAB Products Webpage (waybackmachine.com)

EX2007 Cable Management In Solar PV Arrays: A Review of Requirement in the National Electrical Code and How CAB Cable Rings and Saddles Meet These Requirements Prepared for Cambria County Association for the Blind and Handicapped by Brooks Engineering

EX2008 Sunpower Field Process Change Review 1: Development Review Presentation

EX2009 Inter Solar Award 2001 Finalist: Photovoltaics

EX2010 April 7, 2015 Email from Mitch Bowman to Allen Smith regarding CAB Solutions Dielectric Strength Testing

EX2011 April 10, 2015 Email from Allen Smith to Mitch Bowman regarding CAB Solutions PVC Coating with Attachments

EX2012 July 2, 2015 Email from Mitch Bowman to Tim Wedding, et al. regarding CAB Mechanical Design Guide 6-26-15.pptx

Appendix B

Information Reviewed and Considered

Description

EX2013 September 15, 2015 Email from Terry Moore to Timothy Wedding regarding First Solar RFQ - Wire Management

EX2014 September 21, 2015 Email from Allen Smith to smurphy@firstsolar.com regarding CAB Cable Management Product Line

EX2015 October 2, 2015 Email from Allen Smith to smurphy@firstsolar.com regarding First Solar RFQ - Wire Management

EX2016 "50 Array-Changing Technologies," PV Magazine Article

EX2017 January 18, 2016 Email from Anthony Coker to Dana Clare Redden regarding Anthony Please Meet Allen Smith

EX2018 "eBOX Optimization: Aerial Cable Support Systems," SolarPro Article, July/August 2016

EX2019 May 20, 2016 Email from John Giardino to Timothy Wedding regarding CAB System Questions

EX2020 RPCS, Array Technologies, CAB Solar, and EBoS Leader Shoals Technologies Group Partner to Bring Streamlined Approach to Solar Project Installations by RP Construction Services dated July 26, 2018

EX2021 2018 NECA Show Stopper: CAB Solar Integrated Grounding Cable Management Award

EX2022 "2018 NECA Show Stopper Winners," www.ecmag.com Article, January 2019

EX2023 2019 Top Solar Component Products (solarpowerworldonline.com)

EX2024 "2021 Top Solar Components and Equipment," Solar Power World

EX2025 PV Magazine, January 2022

EX2026 "Congratulations 2022 Leadership in Solar Energy," solarpowerworldonline.com List

EX2027 "Congratulations 2023 Leadership in Solar Energy," solarpowerworldonline.com List

EX2028 Declaration of Mitchel F. Bowman In Support of Patent Owner's Response dated August 5, 2024

EX2029 Mitchel F. Bowman CV

EX2030 CAB Prototyping at Solar Tac, 6/25/14-6/27/14 Presentation by SunEdison

EX2031 November 14, 2014 Email from Tim Wedding to Mitch Bowman regarding SunEdison CAB Contact

EX2032 August 17, 2015 Email from Mark Cooper to Various regarding Two Items from Monthly Technical Review

EX2033 Declaration of William F. Brooks, PE In Support of Patent Owner's Response dated August 8, 2024

EX2034 William F. Brooks, PE CV

EX2035 Solar Market Insight Report: 2023 Year in Review (seia.org)

EX2036 NREL Spring 2024 Solar Industry Update Presentation dated May 14, 2024

EX2037 Cable Management In Solar PV Arrays: A Review of Requirement in the 2017 and 2020 Editions of the National Electrical Code and How CAB Solar Hangers Meet These Requirements
Prepared for Cambria County Association for the Blind and Handicapped by Brooks Engineering

EX2038 Declaration of Edward C. Kern, Jr., Ph.D., dated July 25, 2024

Appendix B

Information Reviewed and Considered

Description

EX2039 Edward C. Kern, jr., Ph.D. Bio

EX2041 CAB Solar Cable Management Installation Guide, Revised 01/28/2022

EX2042 June 19, 2017 Email from Tim Wedding to artur.penedo@aldesa.es regarding Request for Quotation for Client PV Projects Sonnergia

EX2043 Intertek Listing Constructional Data Report (CDR) No. 103484990LAX-001 Issued May 22, 2018, Revised June 15, 2024

EX2044 Declaration of Jonathan D. Putnam In Support of Patent Owner's Response dated August 7, 2024

EX2045 Jonathan D. Putnam Bio and Expert Testimony

EX2046 CAB Sales Data, 2014 - 2024

EX2047 CAB Comparison of Solar Cable Management Systems

EX2048 Compare CAB® Solar vs. Trenching or Cable Tray Table

EX2049 Cost Comparison of CAB Standard vs New Ground Max Cable Management System

EX2050 July 14, 2017 Email from Timothy Zelkovich to Timothy Wedding regarding Mount Signal 3 Solar - CAB

EX2051 June 20, 2016 Email from Caleb Ward to Tim Wedding regarding Dominion Solar Projects - CAB RFQ

EX2052 Orbital Solar Services Quote Request Form for Project Happy Solar dated 2/21/2022

EX2053 CSI Vendor Sourcing Form for Project Silver Peak dated March 27, 2023

EX2054 Blattner Energy Requisition for Project 861 - Pecan dated 2/7/2018

EX2055 NFPA 70 2014 National Electrical Code

EX2056 Customer and Project List

EX2057 Various Schematics

EX2058 Declaration of Denise L. Studinary In Support of Patent Owner's Response dated August 8, 2024

EX2059 Declaration of Joseph William Novak, P.E., MSE, MBA, S.P., In Support of Patent Owner's Response dated August 4, 2024

EX2060 SolarPro Magazine, February/March 2013

EX2061 Declaration of Allen Garrett Smith In Support of Patent Owner's Response dated August 4, 2024

EX2062 CAB Cable Rings & Saddles for Solar Panel Wiring Brochure

EX2063 Wind and Solar Power Systems, Third Edition Excerpts

EX2064 Declaration of Joshua Phinney, Ph.D., In Support of Patent Owner's Response dated August 7, 2024

EX2065 Joshua W. Phinney, Ph.D., P.E., CV

EX2066 CAB Products Grounding Messenger Wire Evaluation Electrical Report by CAB Solar, Revision 4 dated December 11, 2017

Appendix B

Information Reviewed and Considered

Description

Patents

U.S. Patent No. 10,063,039
U.S. Patent No. 10,177,551
U.S. Patent No. 10,461,518
U.S. Patent No. 10,811,859
U.S. Patent No. 10,978,861
U.S. Patent No. 11,349,291
U.S. Patent No. 11,437,790
U.S. Patent No. 11,569,646
U.S. Patent No. 9,800,028
U.S. Patent No. D796,307
U.S. Patent No. D798,138
U.S. Patent No. D806,240
U.S. Patent No. D826,399
U.S. Patent No. D913,493
U.S. Patent No. D968,596
U.S. Patent No. D968,597
U.S. Patent No. D968,598
U.S. Patent No. RE49,170

Deposition Transcripts

Deposition Transcript of Allen Garrett Smith taken September 25, 2024
Deposition Transcript of Edward C. Kern, Jr., Ph.D., taken October 1, 2024
Deposition Transcript of Jonathan D. Putnam, Ph.D., taken October 3, 2024 and Associated Exhibits
Deposition Transcript of Joshua W. Phinney, Ph.D., taken September 13, 2024 and Associated Exhibit
Deposition Transcript of Mitchel Bowman taken October 11, 2024
Deposition Transcript of William Brooks taken October 10, 2024

Appendix B

Information Reviewed and Considered

Description

Documents Independently Obtained

"5 Things You Need to Know about Fixed-tilt Solar Racking," Mibet Energy. (<https://www.mbt-energy.com/news/industry/2208161.html>, viewed on October 15, 2024.)

"About AWM," AWM. (<https://affordablewm.com/about-us/>, viewed on September 9, 2024.)

"Affordable Wire Management Launches New Hardware Offerings to Boost Construction Productivity," Affordable Wire Management. (<https://affordablewm.com/affordable-wire-management-launches-new-hardware-offerings-to-boost-construction-productivity/>, viewed on September 11, 2024.)

"Affordable Wire Management," Global FinReg. (<https://globalfinreg.com/en/lookup/AFFORDABLE-WIRE-MANAGEMENT-LLC/United-States/549300SLY7O0QPQPHG63>, viewed on September 9, 2024.)

"Assignment abstract of title for Application 17349447," USPTO. (<https://assignment.uspto.gov/patent/index.html#/patent/search/resultAbstract?id=11349291&type=patNum>, viewed on September 9, 2024.)

"Balance of Solar PV Systems (BOS)," Greentech Renewables. (<https://www.greentechrenewables.com/article/balance-solar-pv-systems-bos>, viewed on October 11, 2024.)

"CAB Products," CAB. (<https://www.cabproducts.com/>, viewed on September 9, 2024.)

"CAB Solar Cable Management," CAB. (<https://www.cabproducts.com/solar/>, viewed on September 9, 2024.)

"Experience," AWM. (<https://affordablewm.com/experience/>, viewed on September 9, 2024.)

"Locking cable hanger and method of using," Google Patents. (<https://patents.google.com/patent/US11349291B2/en?q=11349291>, viewed on October 11, 2024.)

"Photovoltaics, Solar Energy Technologies Office," Office of Energy Efficiency & Renewable Energy. (<https://www.energy.gov/eere/solar/photovoltaics>, viewed on September 9, 2024.)

"Photovoltaics: Basic Design Principles and Components," Department of Energy. (<https://www.nrel.gov/docs/legosti/fy97/6981.pdf>, viewed on October 11, 2024.)

"Privacy Policy," CAB. (<https://www.cabproducts.com/privacy-policy/>, viewed on September 9, 2024.)

"Solar Cell, Module, Panel and Array: What's the Difference?" CNET. (<https://www.cnet.com/home/energy-and-utilities/solar-cell-module-panel-and-array-whats-the-difference/>, viewed on October 11, 2024.)

"Solar Power 101: What is Solar Energy?" EnergySage. (<https://www.energysage.com/about-clean-energy/solar/>, viewed on September 12, 2024.)

"Solar Project Types: Utility-Scale, Commercial, Residential," Targray. (<https://www.targray.com/media/articles/solar-project-types>, viewed on September 9, 2024.)

"Solar PV vs Solar Thermal: What's the Difference?" Solar Tech Advisor. (<https://solartechadvisor.com/pv-solar-thermal/>, viewed on September 13, 2024.)

"Solar Thermal Technologies," Energypedia. (https://energypedia.info/wiki/Solar_Thermal_Technologies, viewed on September 12, 2024.)

"Solutions," AWM. (<https://affordablewm.com/solutions/>, viewed on September 9, 2024.)

"Spring 2024 Solar Industry Update," National Renewable Energy Laboratory. (<https://www.nrel.gov/docs/fy24osti/90042.pdf>, viewed on September 9, 2024.)

"What is U.S. electricity generation by energy source?" U.S. Energy Information Administration. (<https://www.eia.gov/tools/faqs/faq.php?id=427&t=3>, viewed on September 10, 2024.)

"Who We Serve," AWM. (<https://affordablewm.com/partners/>, viewed on September 9, 2024.)

Brown & Williamson Tobacco Corp. v. Philip Morris Inc., 229 F.3d 1120, 1129 (Fed. Cir. 2000)

Graham v. John Deere Co. of Kansas City, 383 U.S. 1, 17-18 (1966)

Appendix B

Information Reviewed and Considered

Description

In re Applied Materials, Inc., 692 F.3d 1289, 1300-01 (Fed. Cir. 2012)

In re DBC, 545 F.3d 1373, 1384 (Fed. Cir. 2008.)

In re Rouffet, 149 F.3d 1350, 1355 (Fed. Cir. 1998)

Merck & Co., Inc. v. Teva Pharmaceuticals USA, 395 F.3d 1364,1376 (Fed. Cir. 2005)

United States Code: Title 35 – Patents, § 103

Exhibit 1.1

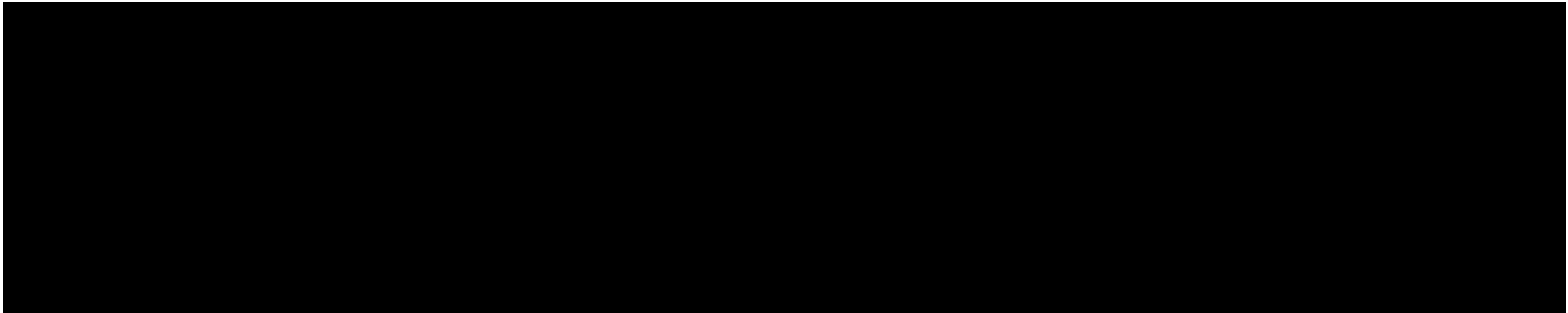


Exhibit 1.1

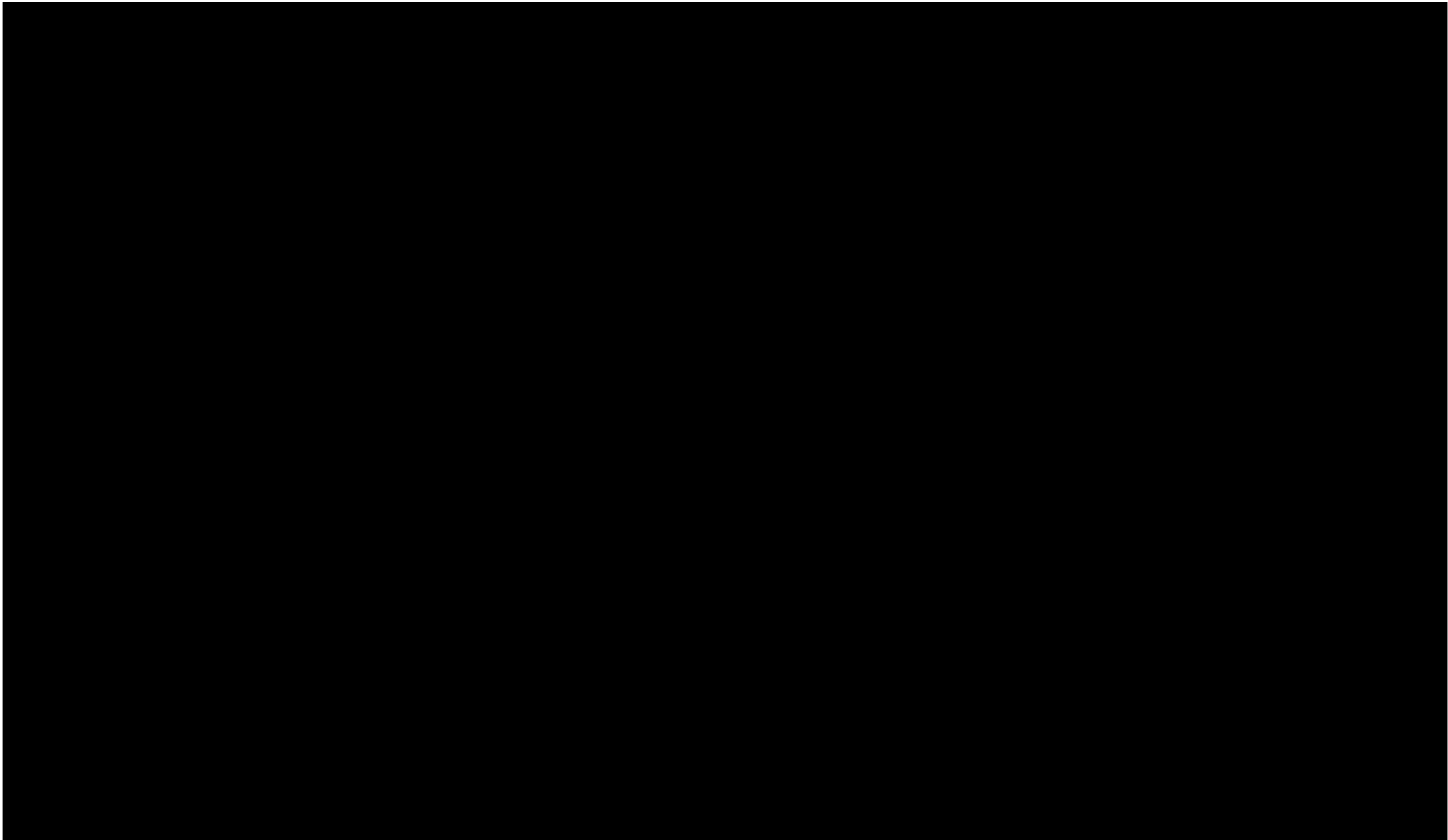


Exhibit 1.1

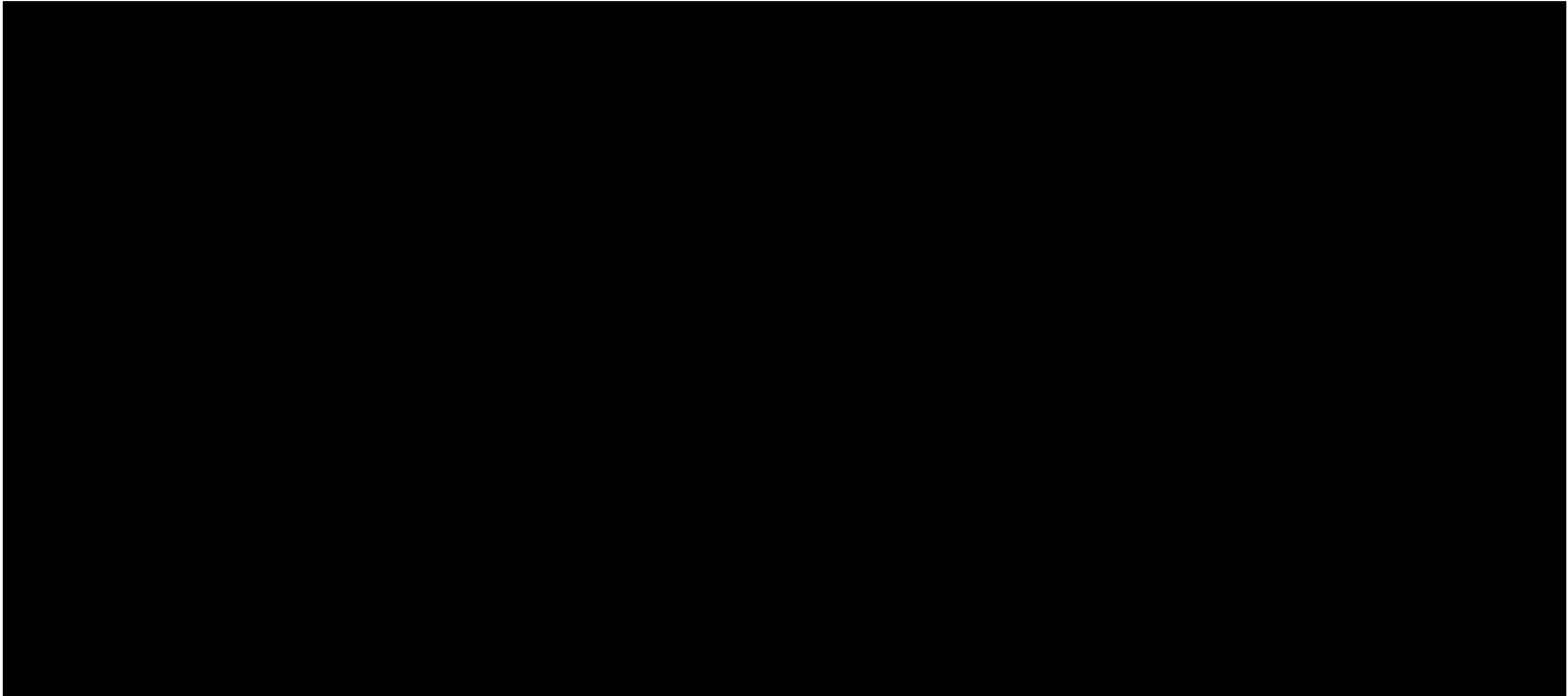


Exhibit 1.1

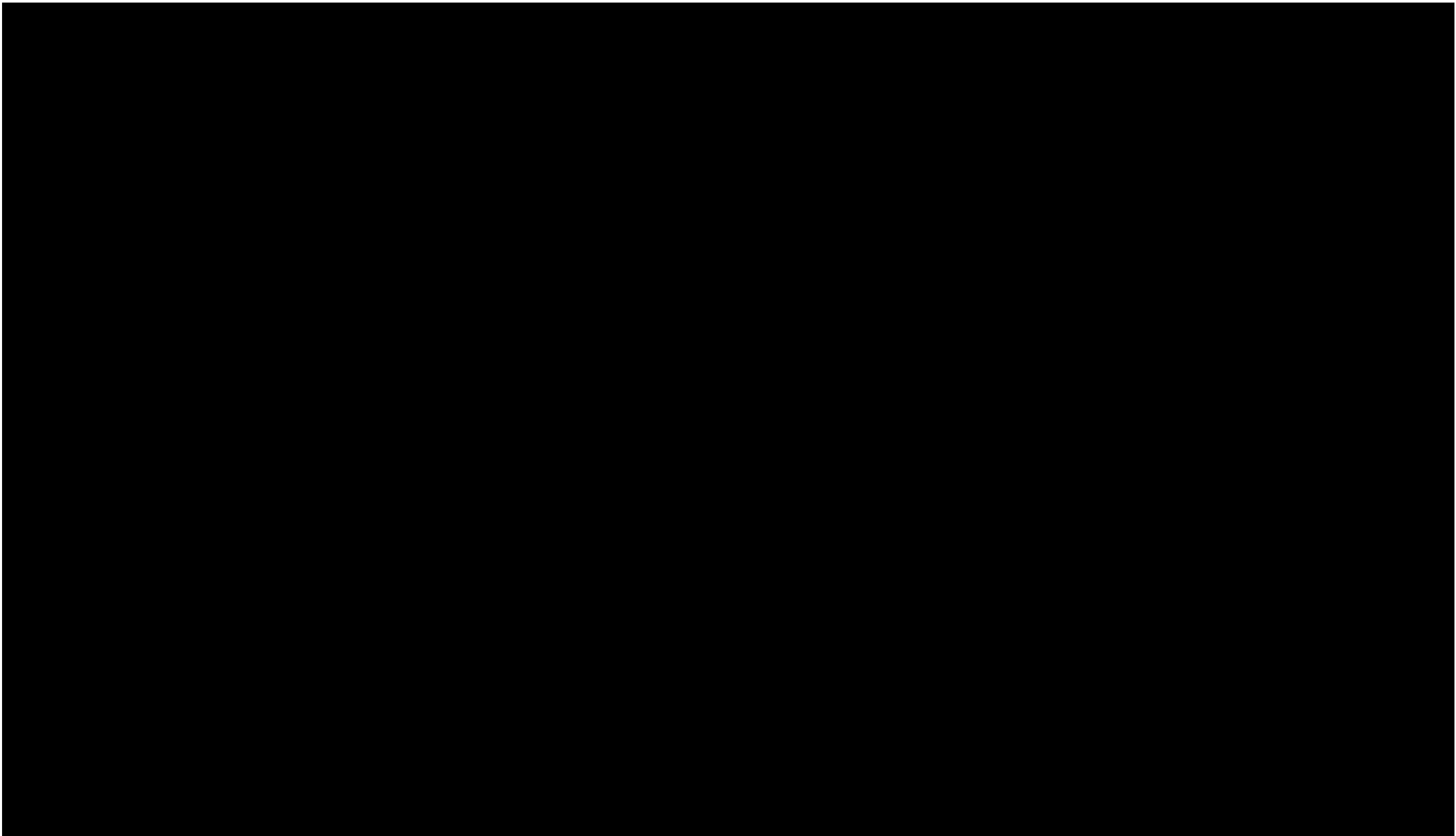


Exhibit 1.1

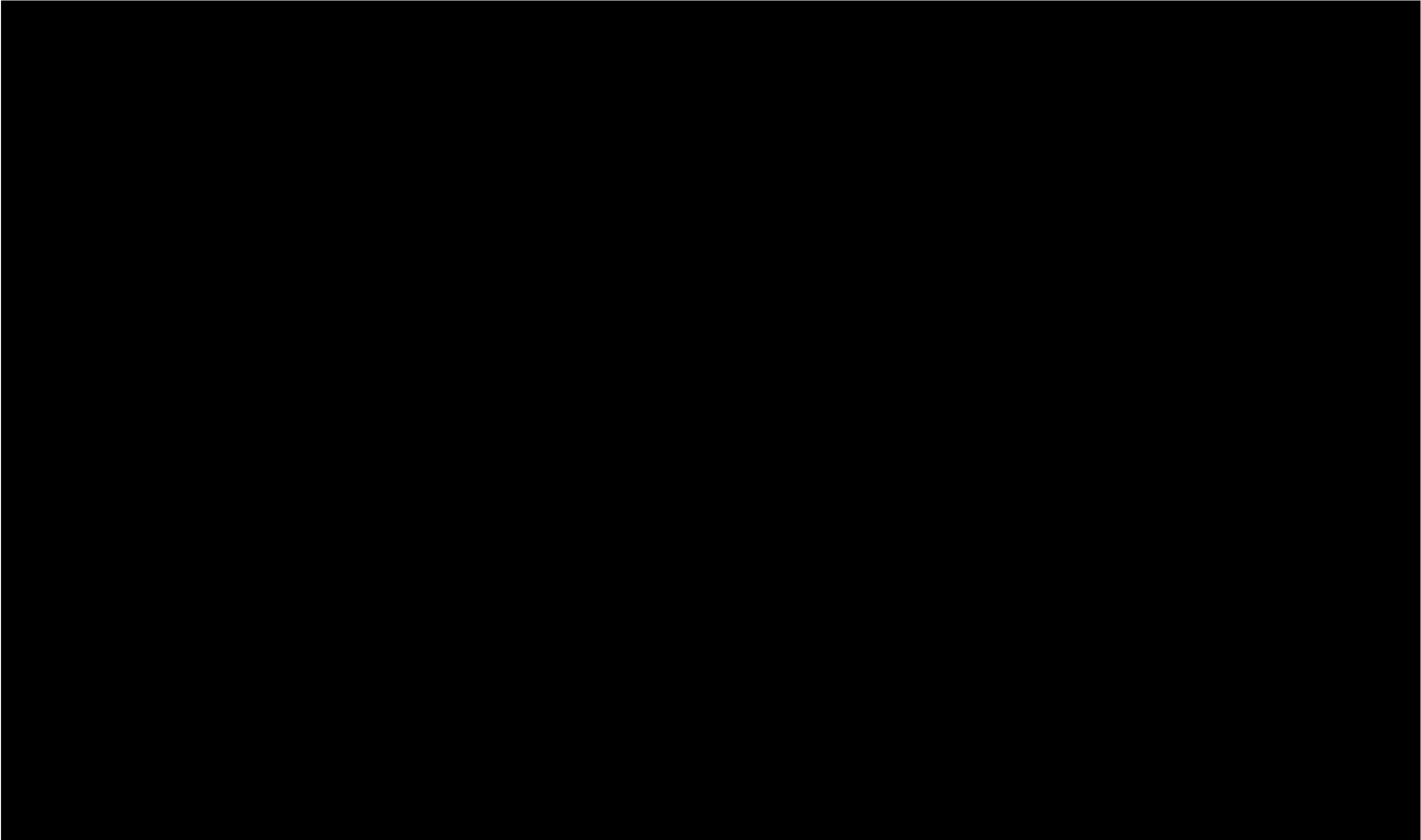


Exhibit 1.1

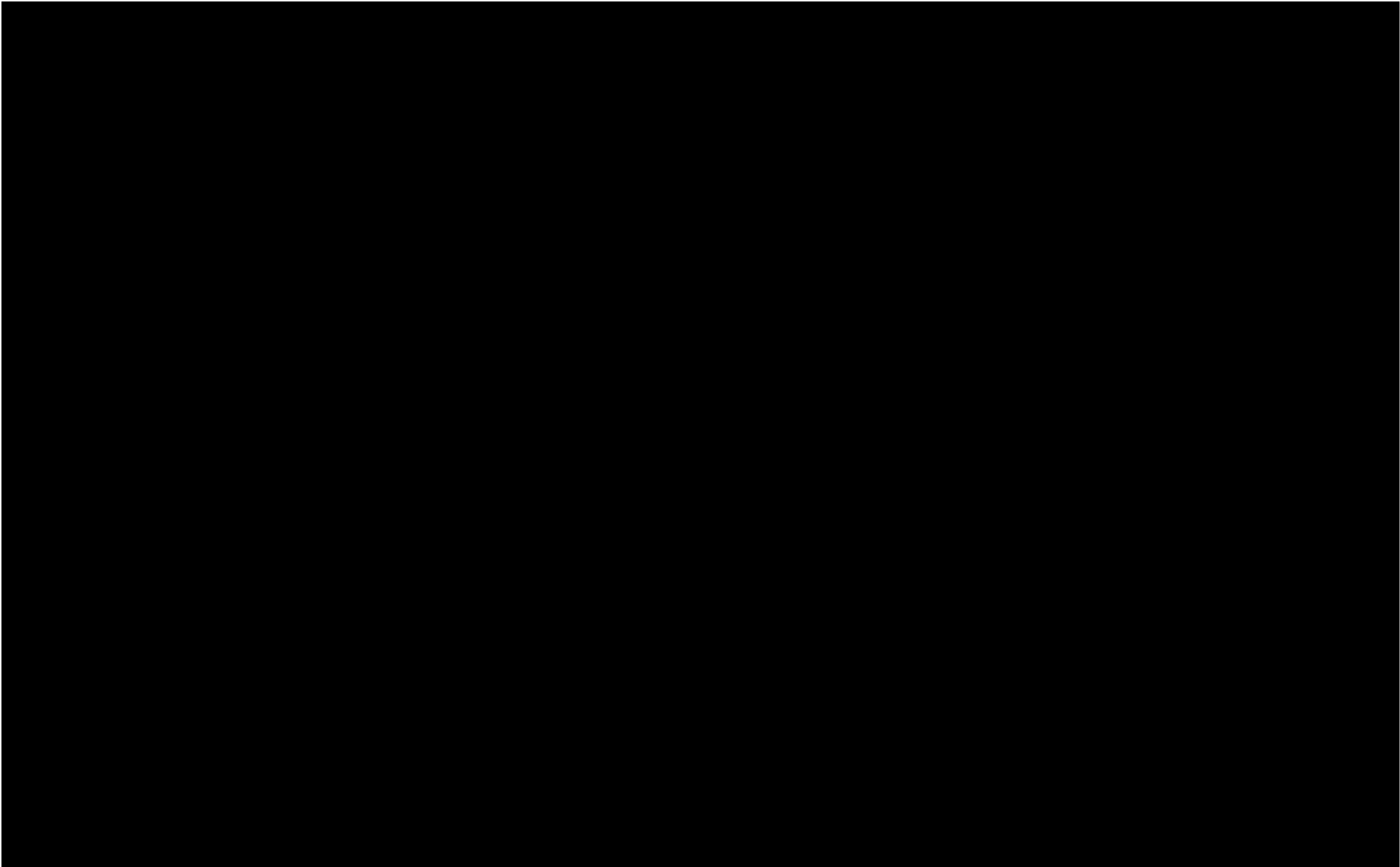


Exhibit 1.2



[Redacted]

Exhibit 1.2

[REDACTED]

[REDACTED]

[REDACTED]

Exhibit 1.2

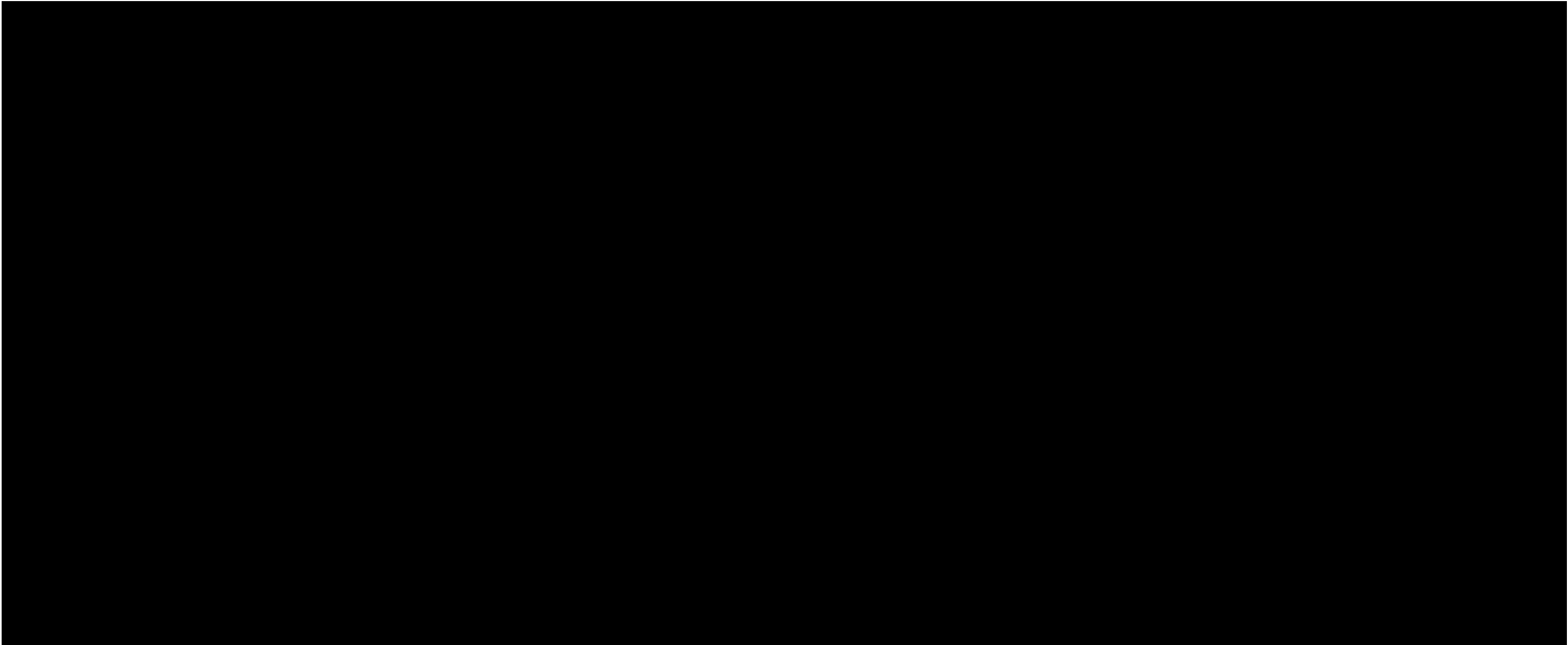
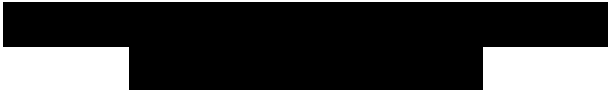


Exhibit 1.2

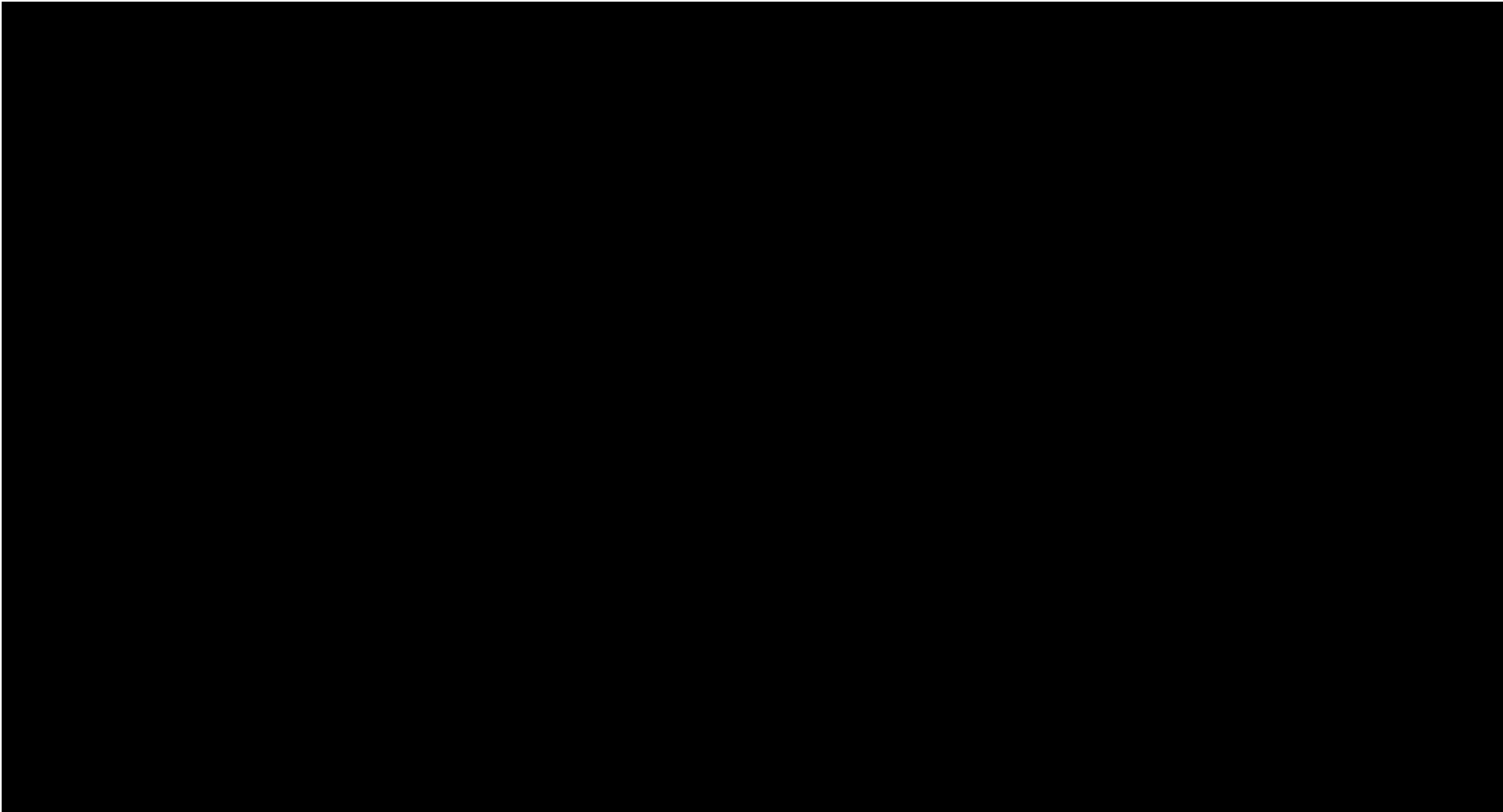


Exhibit 1.2

[REDACTED]

[REDACTED]

[REDACTED]

Exhibit 1.2

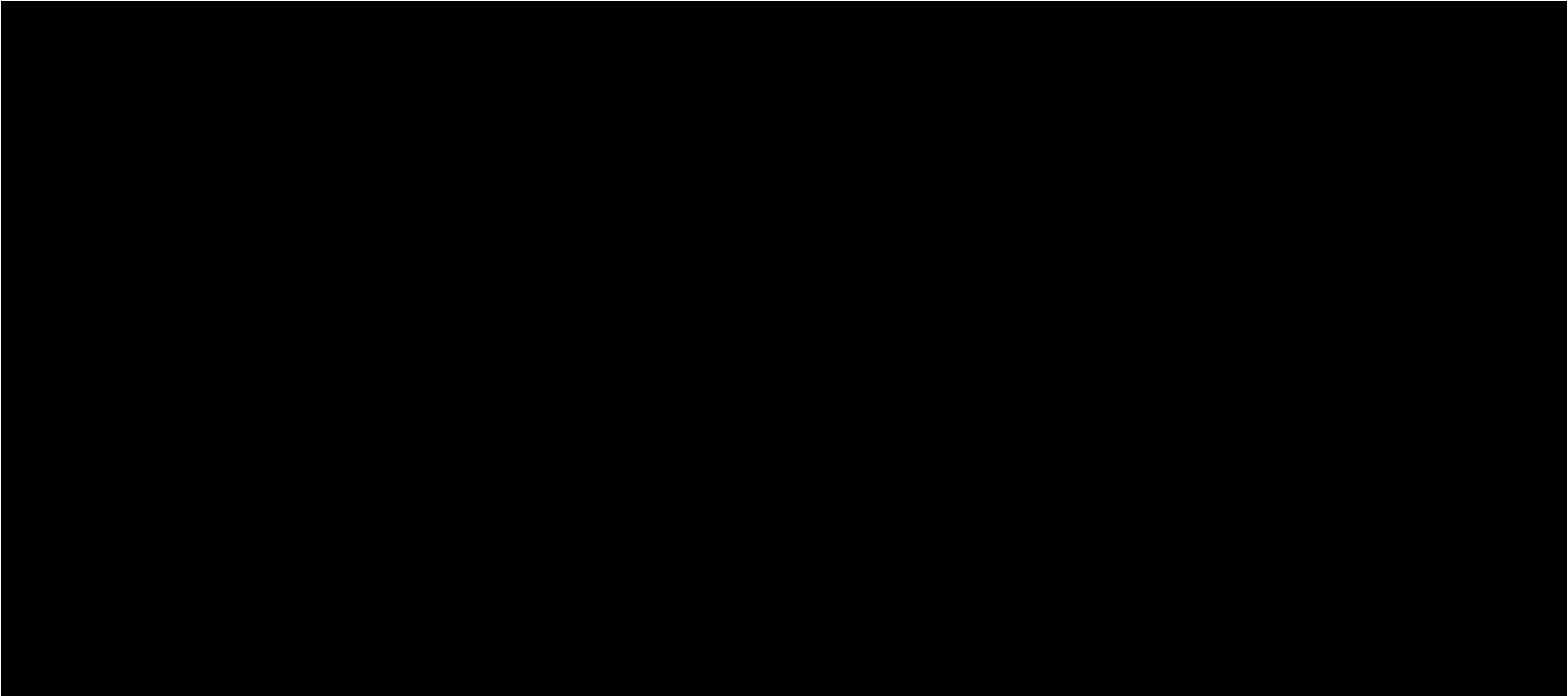
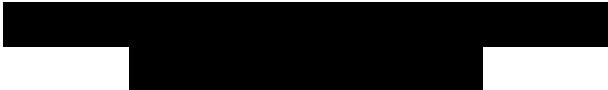


Exhibit 1.2

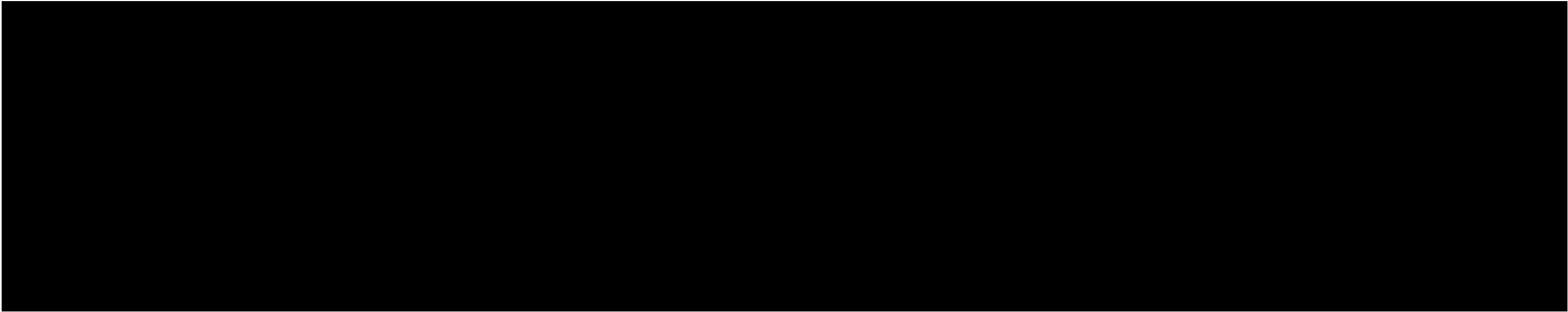


Exhibit 1.3



Exhibit 1.3

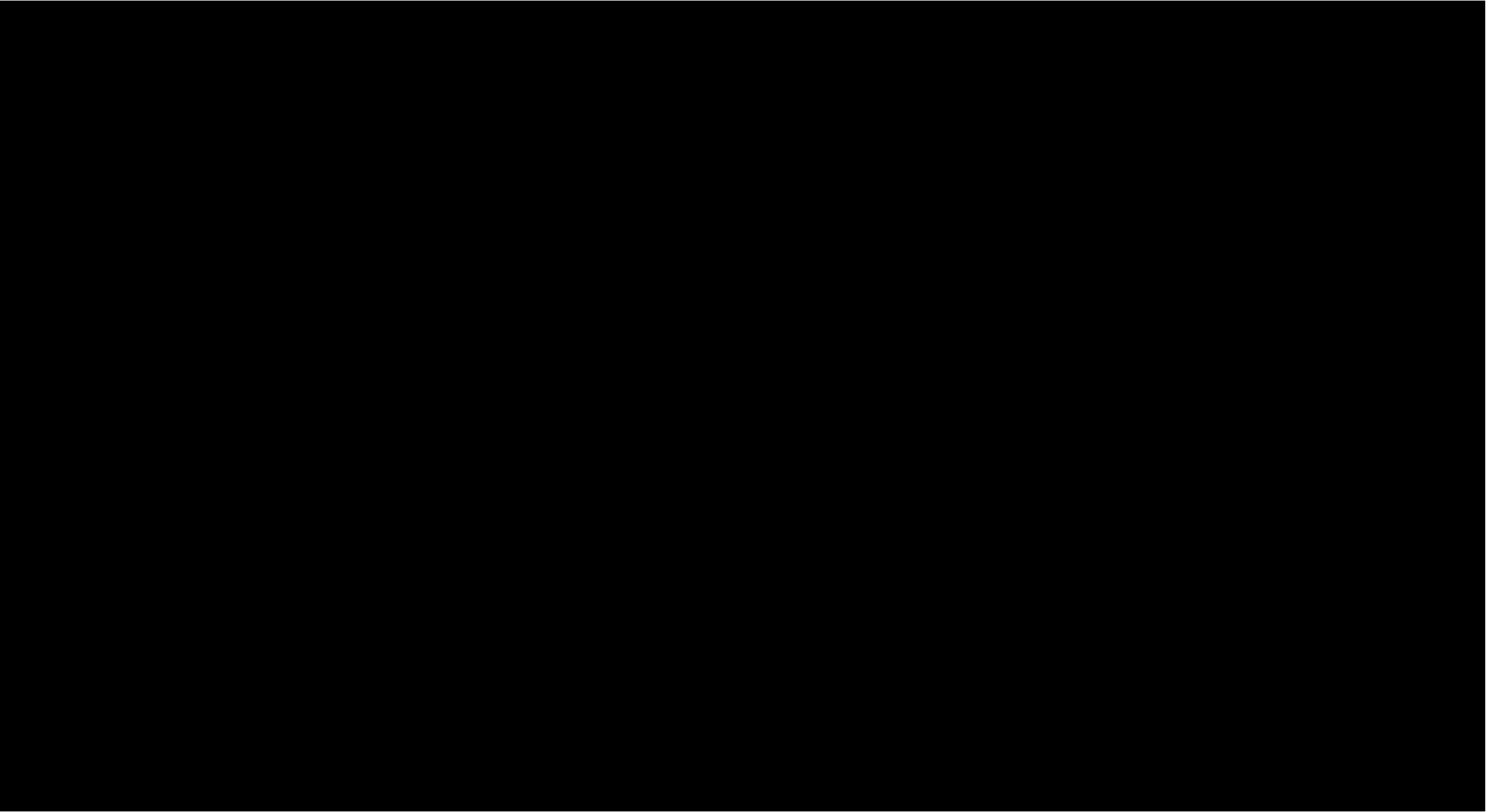


Exhibit 1.3

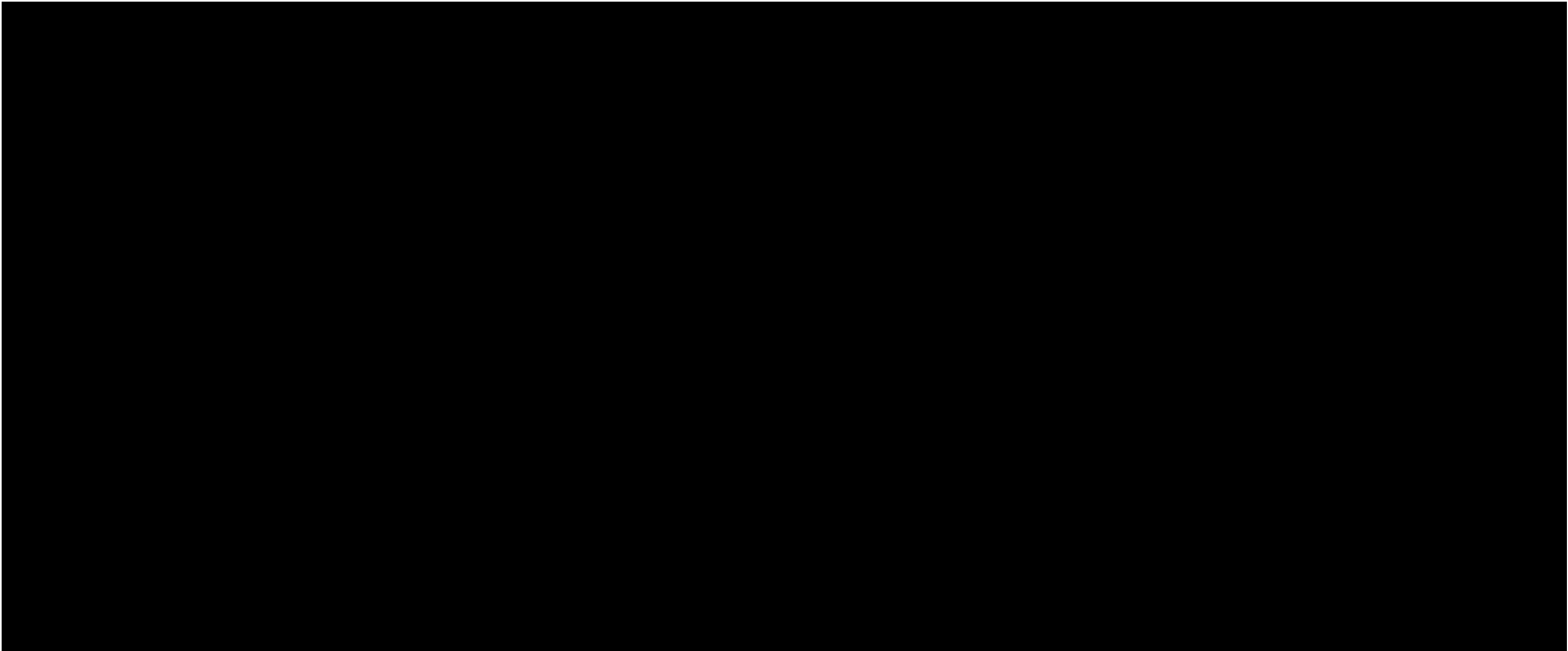


Exhibit 1.3

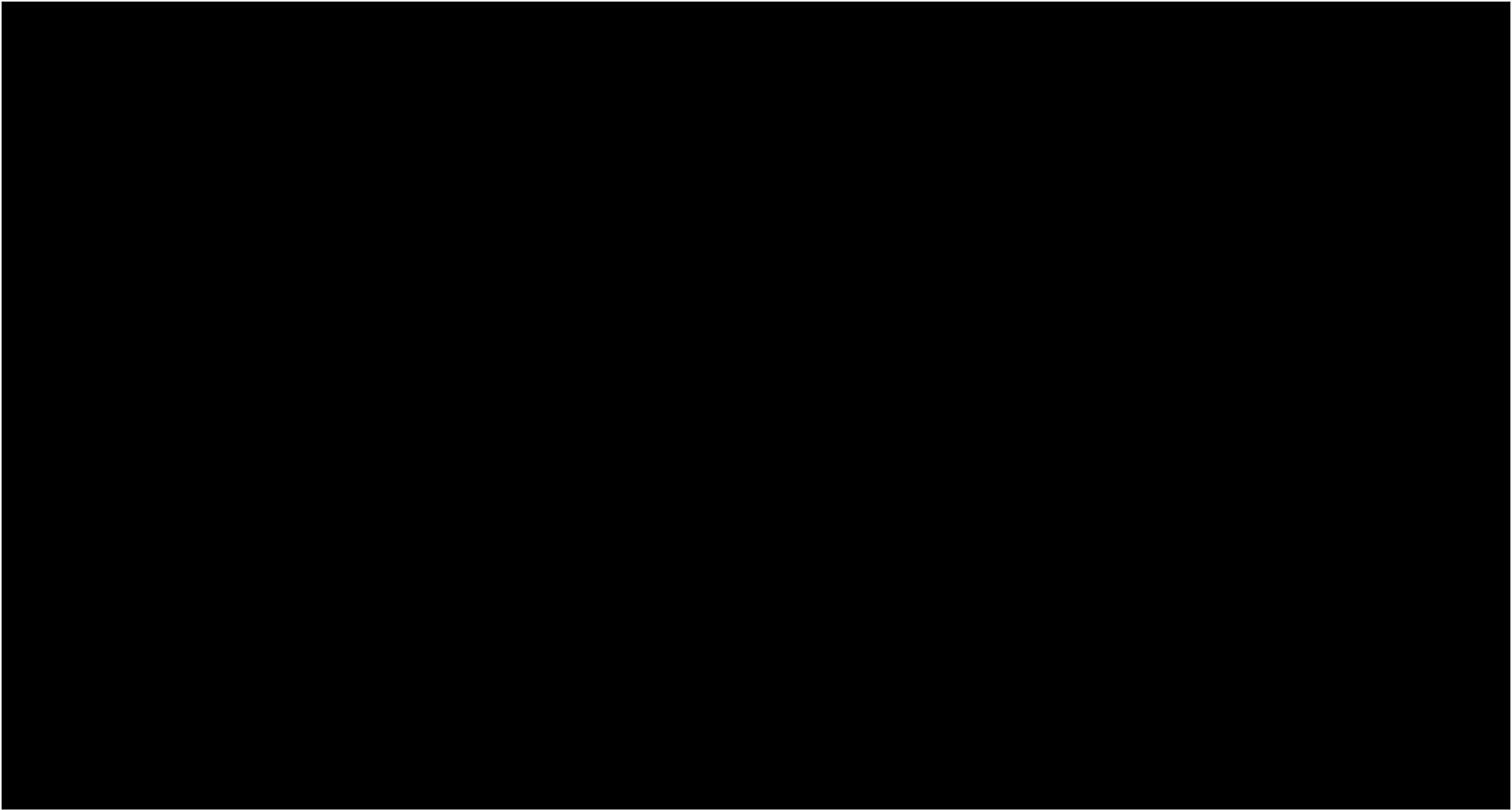


Exhibit 1.3

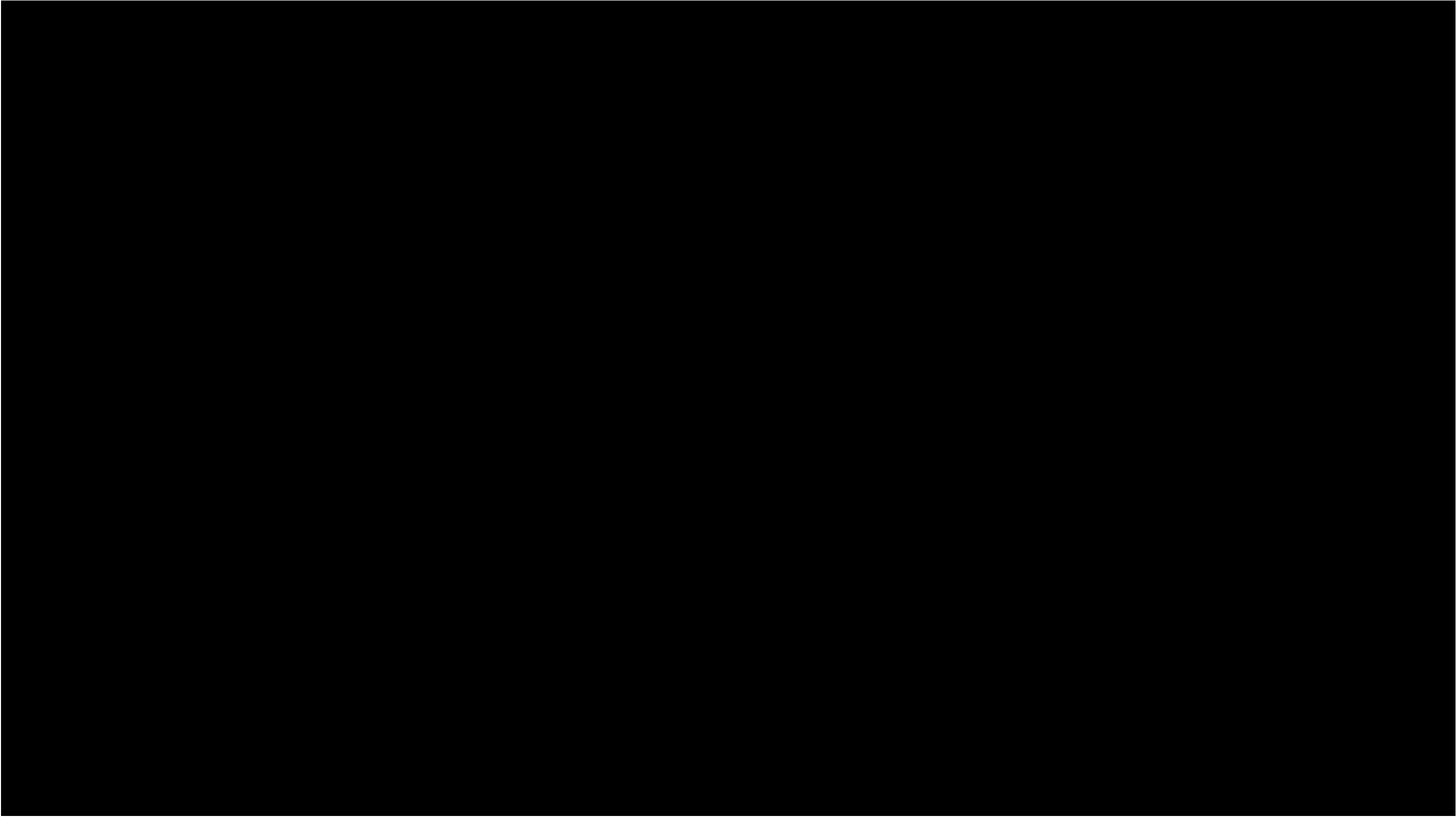


Exhibit 1.3

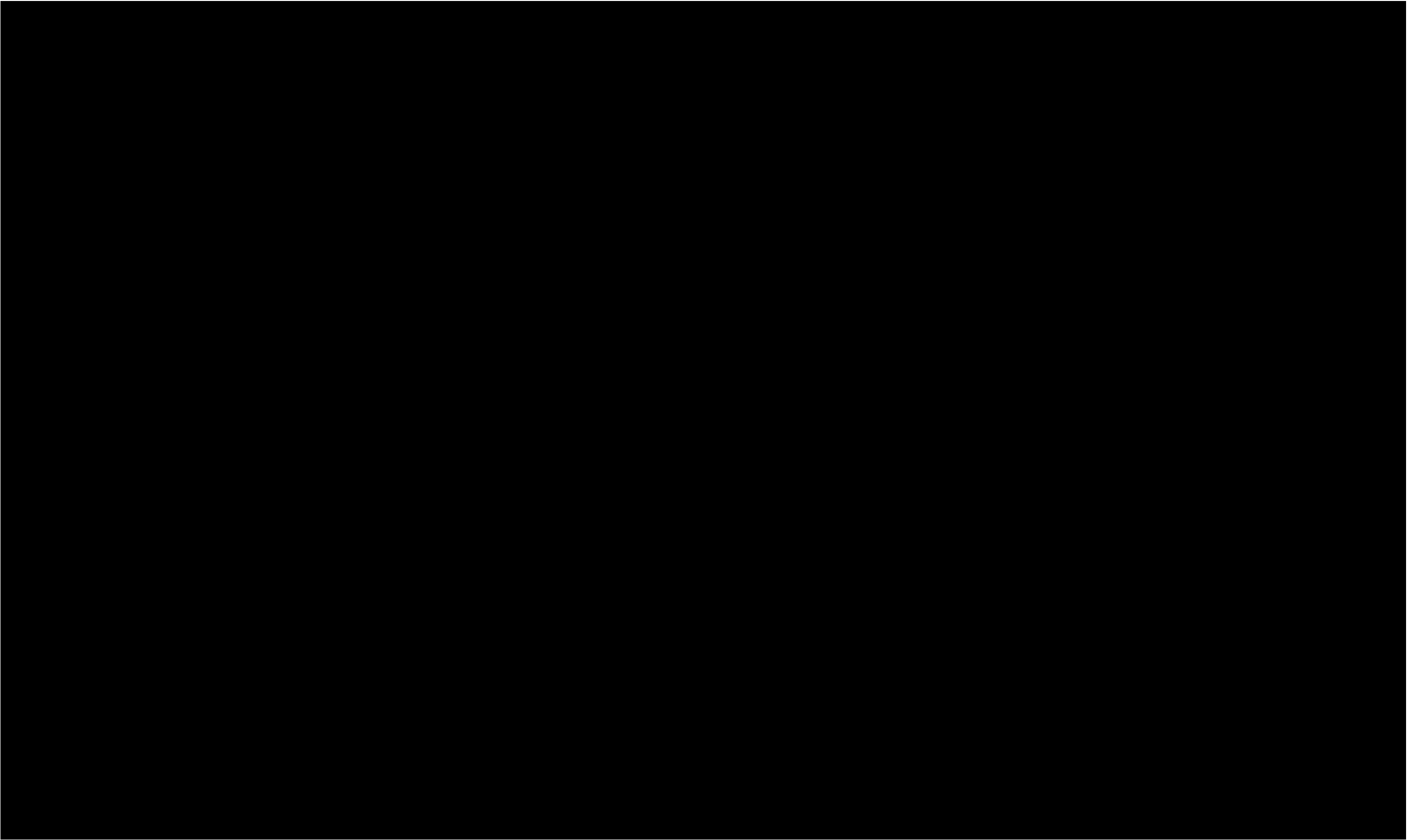


Exhibit 2

[REDACTED]

[REDACTED]

[REDACTED]

Exhibit 3.1

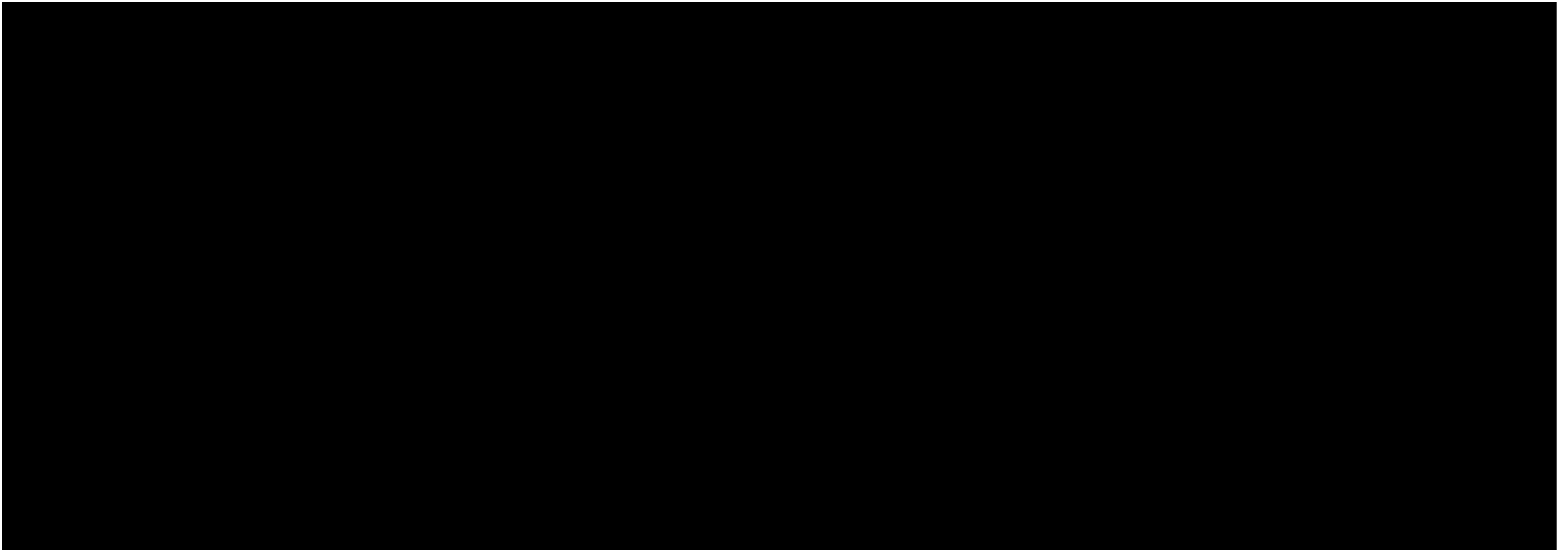


Exhibit 3.2

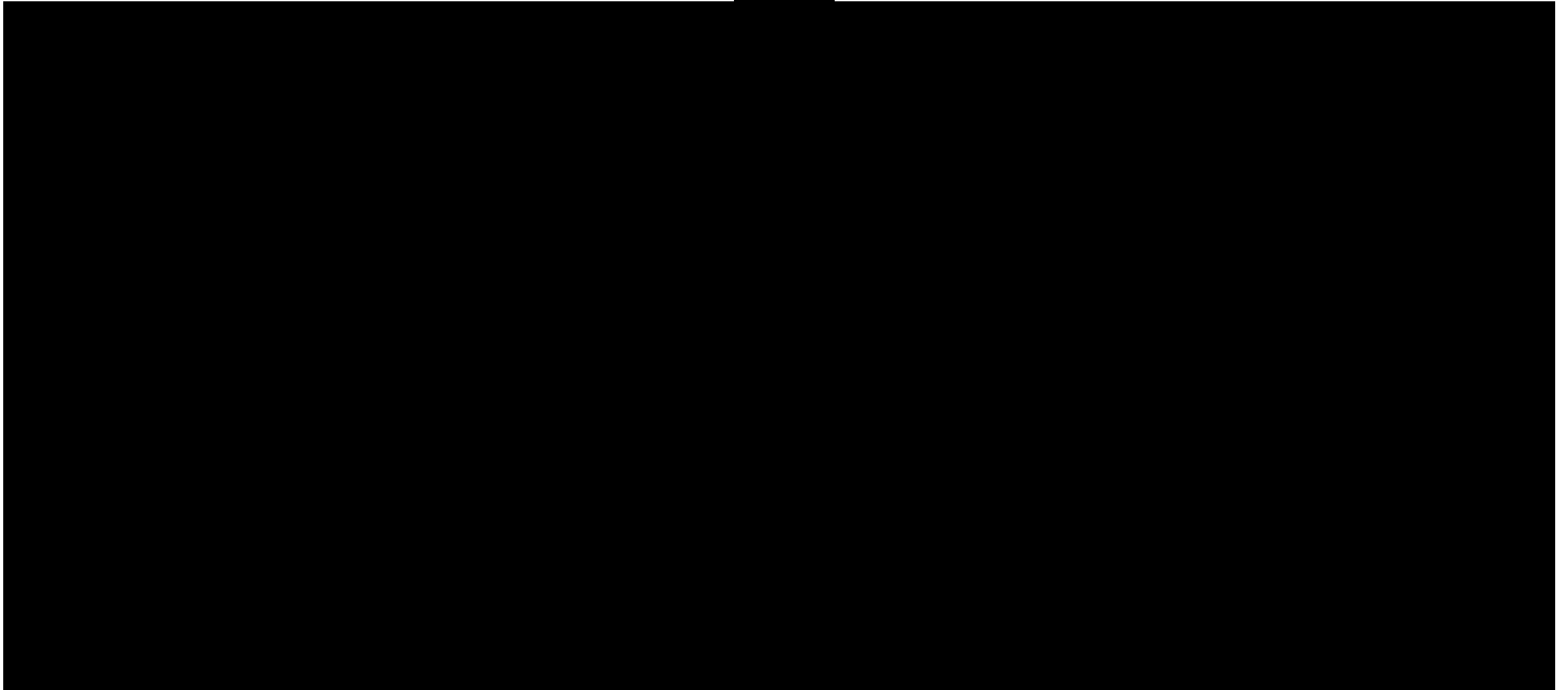


Exhibit 4
Mapping Between CAB Patents And CAB Part Numbers
As Identified by CAB's Patent Marking Website

		CAB Patents																	
Part #	Description	'291	'551	RE49,170	D826,399	10,978,861	11,569,646	D913,493	10,461,518	10,811,859	D968,596	9,800,028	11,437,790	D968,598	D798,138	D796,307	D968,597	10,063,039	D806,240
End Pier Kits																			
9017	END PIER ASSEMBLY KIT .SOL																		
9282	END PIER ASSEMBLY KIT W/O DEAD END .SOL																		
9465	END PIER ASSEMBLY KIT 8"MT BLT.SOL																		
9607	END PIER ASSEMBLY KIT GRD (.2955IN) .SOL																		
9754	STRAND SPLICE .2955IN .SOL																		
9815	END PIER ASSEMBLY KIT BV SPECIAL .SOL																		
10013	END PIER ASSEMBLY KIT GRD (.3057IN) .SOL																		
10017	END PIER ASSEMBLY KIT GRD(.2955IN)2".SOL																		
10068	STRAND SPLICE .3057IN .SOL																		
10075	END PIER ASSEMBLY KIT (0.375IN) .SOL																		
10110	END PIER ASSEMBLY KIT GRD(.3057IN)2".SOL																		
Mid Pier Kits																			
9016	MID PIER STUD ASSEMBLY KIT .SOL																		
9267	MID PIER L BRKT KIT 8X2X1/2X5.25 .SOL																		
9353	MID PIER L BRKT KIT 5.5X2X1/2X5.25 .SOL																		
9451	MID PIER L BRKT KIT 8X2X1/2 6" MTBLT.SOL																		
9467	MID PIER L BRKT KIT 10X2X1/2X5.25 .SOL																		
9515	L BRACKET RETENTION PLATE GALV (13 DEG)																		
9516	L BRACKET RETENTION PLATE GALV (35 DEG)																		
9563	MID PIER L BRKT KIT 9X1X1/2X5.25 .SOL																		
9564	MID PIER L BRKT KIT 8X1X1/2X5.25 .SOL																		
9568	MID PIER L BRKT KIT 8X1X3/8X5.25 .SOL																		
9571	MID PIER L BRKT KIT 8X2X3/8X5.25 .SOL																		
9577	MID PIER L BRKT KIT 8X2X5/8X5.25 .SOL																		
9579	MID PIER L BRKT KIT 12X2X1/2X5.25 .SOL																		
9581	MID PIER L BRKT KIT 12X2X5/8X5.25 .SOL																		
9583	MID PIER L BRKT KIT 10X2X5/8X5.25 .SOL																		
9698	PIER BRACKET 7 1/4 X 1 1/2 X 1/4 .SOL																		
9701	MID PIER L BRKT 9X1X1/2X5.25 GB CLA .SOL		X						X										
9702	MID PIER L BRKT 8X1X1/2X5.25 GB CLA .SOL		X						X										
9703	MID PIER L BRKT 12X2X1/2X5.25 GB CLA.SOL		X						X										
9704	MID PIER L BRKT 5.5X2X1/2X5.25GB CLA.SOL		X						X										
9705	MID PIER L BRKT 8X2X1/2X5.25 GB CLA .SOL		X						X										
9706	MID PIER L BRKT 10X2X1/2X5.25GB CLA .SOL		X						X										
9707	MID PIER L BRKT 8X2X5/8X5.25 GB CLA .SOL		X						X										
9708	MID PIER L BRKT 10X2X5/8X5.25GB CLA .SOL		X						X										
9709	MID PIER L BRKT 12X2X5/8X5.25 GB CLA.SOL		X						X										
9746	PIER BRACKET 10 X 1 1/2 X 1/4 (3HL) .SOL																		
9799	MID PIER L BRKT 10X2X1/2X5.25GUYCLMP.SOL																		
9816	MID PIER L BRKT KIT 8X2X1/2X5.25 BV .SOL																		
9825	MID PIER L BRKT 12X2X1/2 GUYCLMP.SOL																		
9833	MID PIER L BRKT KIT 5X2X1/2 - TWIST .SOL																		
9850	GB 26 TIN PLTD CLP/SS WA ASSEM .SOL																		
9854	MID PIER L BRKT10X2X1/2X5.25 4CARGUY.SOL																		
9915	MID PIER L BRKT 17X2X1/2X5.25 GB CLA.SOL		X						X										
9955	MID PIER L BRKT 12X2X1/2X11 GB CLA .SOL		X						X										
9968	MID PIER L BRKT 10X3X5/8X5.25 GB CLA.SOL		X						X										
10099	MID PIER L BRKT 12X3X5/8X5.25 GB CLA.SOL		X						X										
10108	MID PIER L BRKT KIT 17X2X1/2X5.25 .SOL																		
10125	MID PIER L BRKT 15X2X1/2X5.25 GB CLA.SOL		X						X	X									
10134	MID PIER GUSSET BRKT 17X3X1/2X5.25GB SOL		X						X										
10144	MID PIER L BRKT KIT 13X2X5/8X5.25 SOL																		
10186	MID PIER L BRKT 17X3X5/8X5.25 GB CLA.SOL		X						X										
10207	MID PIER L BRKT 9X2X5/8X8 GB CLA .SOL		X						X										
10211	MID PIER L BRKT 50 KSI 10X2X5/8X5.25GBC		X						X										
10220	MID PIER L BRKT 7X2X5/8X5.25 GB CLA .SOL		X						X	X									

Exhibit 4
Mapping Between CAB Patents And CAB Part Numbers
As Identified by CAB's Patent Marking Website

		CAB Patents																	
Part #	Description	'291	'551	RE49,170	D826,399	10,978,861	11,569,646	D913,493	10,461,518	10,811,859	D968,596	9,800,028	11,437,790	D968,598	D798,138	D796,307	D968,597	10,063,039	D806,240
Messenger Wire																			
9466	MESSNGR WIRE 1/4IN CLS A GALV EHS STEEL																		
9605	MESSNGR WIRE .295IN COPPER 11.13KA #3		X						X	X									
9841	MESSNGR WIRE 1/4IN CLS C GALV EHS STEEL																		
10010	MESSNGR WIRE .3057IN COPPER 13.00KA #2																		
10011	MESSNGR WIRE .295IN COPPER 10.00KA #3																		
10076	MESSNGR WIRE 3/8IN CLS A GALV EHS STEEL																		
1 Carrier Hangers																			
8944																			
9041																			
9043																			
9338																			
9339																			
9340																			
9341																			
9416								X			X	X	X						
9417								X			X	X	X						
9527																			
9556																			
9692																			
9808																			
9817																			
9903								X			X	X	X						
9917														X					
9925																			
9953								X			X	X	X						
10173								X			X	X	X						
10174								X			X	X	X						
10183								X			X	X	X						
10193								X			X	X	X						
10194																			

Exhibit 4
Mapping Between CAB Patents And CAB Part Numbers
As Identified by CAB's Patent Marking Website

Part #	Description	CAB Patents																	
		'291	'551	RE49,170	D826,399	10,978,861	11,569,646	D913,493	10,461,518	10,811,859	D968,596	9,800,028	11,437,790	D968,598	D798,138	D796,307	D968,597	10,063,039	D806,240
2 Carrier Hangers																			
9127		X		X	X	X	X	X								X			
9128		X		X		X	X	X						X	X				
9129		X		X		X	X	X							X				
9135		X		X	X	X	X	X								X			
9136		X		X		X	X	X						X	X				
9137		X		X		X	X	X							X				
9281		X		X		X	X	X							X				
9316		X			X	X		X		X	X	X					X		
9331		X		X	X	X	X	X								X			
9332		X		X	X	X	X	X								X			
9333		X		X		X	X	X						X	X				
9334		X		X		X	X	X						X	X				
9335		X		X		X	X	X							X				
9336		X		X		X	X	X							X				
9337		X		X		X	X	X							X				
9360		X		X	X	X		X											
9361		X		X	X	X		X											
9406		X			X	X	X	X		X	X	X				X	X		
9407		X			X	X	X	X		X	X	X				X	X		
9422		X			X	X	X	X		X	X	X					X		
9423		X				X	X	X		X	X	X		X					
9424		X				X	X	X		X	X	X							
9430		X		X		X	X	X											
9431		X		X		X	X	X											
9437		X			X	X	X	X		X	X	X						X	
9438		X				X	X	X		X	X	X		X					
9479		X			X	X		X		X	X	X					X		
9687		X			X	X		X		X	X	X					X		
9688		X			X	X		X		X	X	X					X		
9697		X				X		X		X	X	X		X					
9712		X				X		X		X	X	X		X					
9752		X			X	X		X		X	X	X					X		
9760		X				X	X	X		X	X	X		X					
9783		X			X	X	X	X		X	X	X					X		
9847		X			X	X	X	X		X	X	X					X		
9898		X			X	X		X		X	X	X					X		
9905		X			X	X	X	X		X	X	X					X		
9949		X				X	X	X		X	X	X		X					
10018		X			X	X		X		X	X	X					X		
10025		X		X	X	X		X									X		
10172		X			X	X	X	X		X	X	X					X		
10182		X				X	X	X		X	X	X		X					
10213		X				X	X	X		X	X	X		X					

Exhibit 4
Mapping Between CAB Patents And CAB Part Numbers
As Identified by CAB's Patent Marking Website

Part #	Description	CAB Patents																	
		'291	'551	RE49,170	D826,399	10,978,861	11,569,646	D913,493	10,461,518	10,811,859	D968,596	9,800,028	11,437,790	D968,598	D798,138	D796,307	D968,597	10,063,039	D806,240
3 Carrier Hangers																			
9294		X			X	X	X	X			X	X	X				X	X	X
9303		X			X	X	X	X			X	X	X				X	X	X
9350		X			X	X	X	X			X	X	X	X			X	X	X
9351		X			X	X	X	X			X	X	X	X			X	X	X
9517		X			X	X	X	X			X	X	X				X	X	X
9525		X			X	X	X	X			X	X	X	X			X	X	
9526		X			X	X	X	X			X	X	X	X			X	X	
9529		X			X	X	X	X			X	X	X	X			X	X	X
9535		X			X	X	X	X			X	X	X	X			X	X	
9536		X			X	X	X	X			X	X	X	X			X	X	
9549		X			X	X	X	X			X	X	X	X			X	X	X
9557		X			X	X	X	X			X	X	X	X			X	X	
9558		X			X	X	X	X			X	X	X	X			X	X	
9604		X			X	X	X	X			X	X	X				X	X	X
9728		X			X	X		X			X	X	X	X			X	X	
9750		X			X	X	X	X			X	X	X				X	X	X
9802		X			X	X	X	X			X	X	X	X			X	X	
9804		X			X	X	X	X			X	X	X	X			X	X	
9822		X			X	X	X	X			X	X	X	X			X	X	
9902		X			X	X	X	X			X	X	X	X			X	X	
9904		X			X	X	X	X			X	X	X	X			X	X	X
9918		X			X	X	X	X			X	X	X	X			X	X	
9919		X			X	X	X	X			X	X	X	X			X	X	
9920		X			X	X	X	X			X	X	X	X			X	X	
9936		X			X	X	X	X			X	X	X	X			X	X	
9951		X			X	X		X			X	X	X	X			X	X	
9961		X			X	X	X	X			X	X	X	X			X	X	
9994		X			X	X	X	X			X	X	X	X			X	X	
9995		X			X	X	X	X			X	X	X	X			X	X	
10019		X			X	X		X			X	X	X	X			X	X	X
10020		X			X	X		X			X	X	X	X			X	X	
10040		X			X	X	X	X			X	X	X	X			X	X	
10069		X			X	X	X	X			X	X	X	X			X	X	
10088		X			X	X		X			X	X	X	X			X	X	
10103		X			X	X	X	X			X	X	X	X			X	X	
10136		X			X	X		X			X	X	X	X			X	X	
10145		X			X	X	X	X			X	X	X	X			X	X	
10156		X			X	X	X	X			X	X	X	X			X	X	
10167		X			X	X	X	X			X	X	X	X			X	X	
10168		X			X	X	X	X			X	X	X	X			X	X	X
10191		X			X	X		X			X	X	X	X			X	X	
10205		X			X	X	X	X			X	X	X	X			X	X	
10214		X				X	X	X			X	X		X			X	X	
10236		X			X	X		X			X	X	X	X			X	X	
10238		X			X	X	X	X			X	X	X	X			X	X	

Exhibit 4
Mapping Between CAB Patents And CAB Part Numbers
As Identified by CAB's Patent Marking Website

Part #	Description	CAB Patents																	
		'291	'551	RE49,170	D826,399	10,978,861	11,569,646	D913,493	10,461,518	10,811,859	D968,596	9,800,028	11,437,790	D968,598	D798,138	D796,307	D968,597	10,063,039	D806,240
4 Carrier Hangers																			
9945		X				X	X	X			X	X	X	X			X	X	
9950		X				X	X	X			X	X	X	X			X	X	
9983		X				X	X	X			X	X	X	X				X	
9993		X			X	X	X	X			X	X	X	X			X	X	
10001		X			X	X	X	X			X	X	X	X			X	X	
10041		X			X	X	X	X			X	X	X	X			X	X	
10053		X			X	X	X	X			X	X	X	X			X	X	
10063		X				X		X			X	X	X	X			X	X	
10082		X			X	X	X	X			X	X	X	X			X	X	
10116		X			X	X	X	X			X	X	X	X			X	X	
10117		X			X	X	X	X			X	X	X	X			X	X	
10135		X				X		X			X	X	X	X			X	X	
10175		X			X	X		X			X	X	X	X			X	X	
10249		X			X	X	X	X			X	X	X	X			X	X	
5 Carrier Hangers																			
10007		X			X	X	X	X			X	X	X	X			X	X	
10015		X			X	X	X	X			X	X	X	X			X	X	
10083		X			X	X	X	X			X	X	X	X			X	X	
10097		X			X	X	X	X			X	X	X	X			X	X	
6 Carrier Hangers																			
10146		X			X	X	X	X			X	X	X	X			X	X	

Source:
[1] The following CAB Products are protected by U.S. Patents, EX1035 in IPR2024-00178.

Exhibit 5
Patents Identified by CAB as Covering Its Above Ground Cable Management System Components

Patent	Patent Title	Priority Date	Filing Date	Issuance Date
D796,307	Coated Horizontal Cable Hanger	6/12/2014	6/12/2014	9/5/2017
D798,138	Locking Hanger Assembly	10/12/2014	10/12/2014	9/26/2017
11,349,291	Locking Cable Hanger and Method of Using	11/29/2014	6/16/2021	5/31/2022
10,978,861	Locking Cable Hanger and Method of Using	11/29/2014	7/28/2017	4/13/2021
11,569,646	Locking Cable Hanger and Method of Using	11/29/2014	3/12/2021	1/31/2023
RE49,170	Locking Cable Hanger and Method of Using	11/29/2014	3/7/2019	8/9/2022
9,800,028	Gripping Cable Hanger and Method of Using	11/29/2014	5/7/2016	10/24/2017
10,063,039	Gripping Cable Hanger and Method of Using	11/29/2014	10/10/2017	8/28/2018
11,437,790	Gripping Cable Hanger and Method of Using	11/29/2014	4/16/2018	9/6/2022
D806,240	Coated Hanger	10/9/2015	10/9/2015	12/26/2017
D826,399	Coated Hanger	10/9/2015	10/9/2017	8/21/2018
D913,493	Coated Hanger	10/9/2015	5/22/2018	3/16/2021
D968,596	Coated Hanger	10/9/2015	2/16/2021	11/1/2022
D968,597	Coated Hanger	10/9/2015	7/14/2021	11/1/2022
D968,598	Coated Hanger	10/9/2015	8/19/2021	11/1/2022
10,177,551	Grounding System	10/5/2017	10/5/2017	1/8/2019
10,461,518	Grounding System	10/5/2017	11/30/2018	10/29/2019
10,811,859	Grounding System	10/5/2017	8/28/2019	10/20/2020

Note:

(a) These were the patents listed on the CAB website as covering various CAB part numbers.

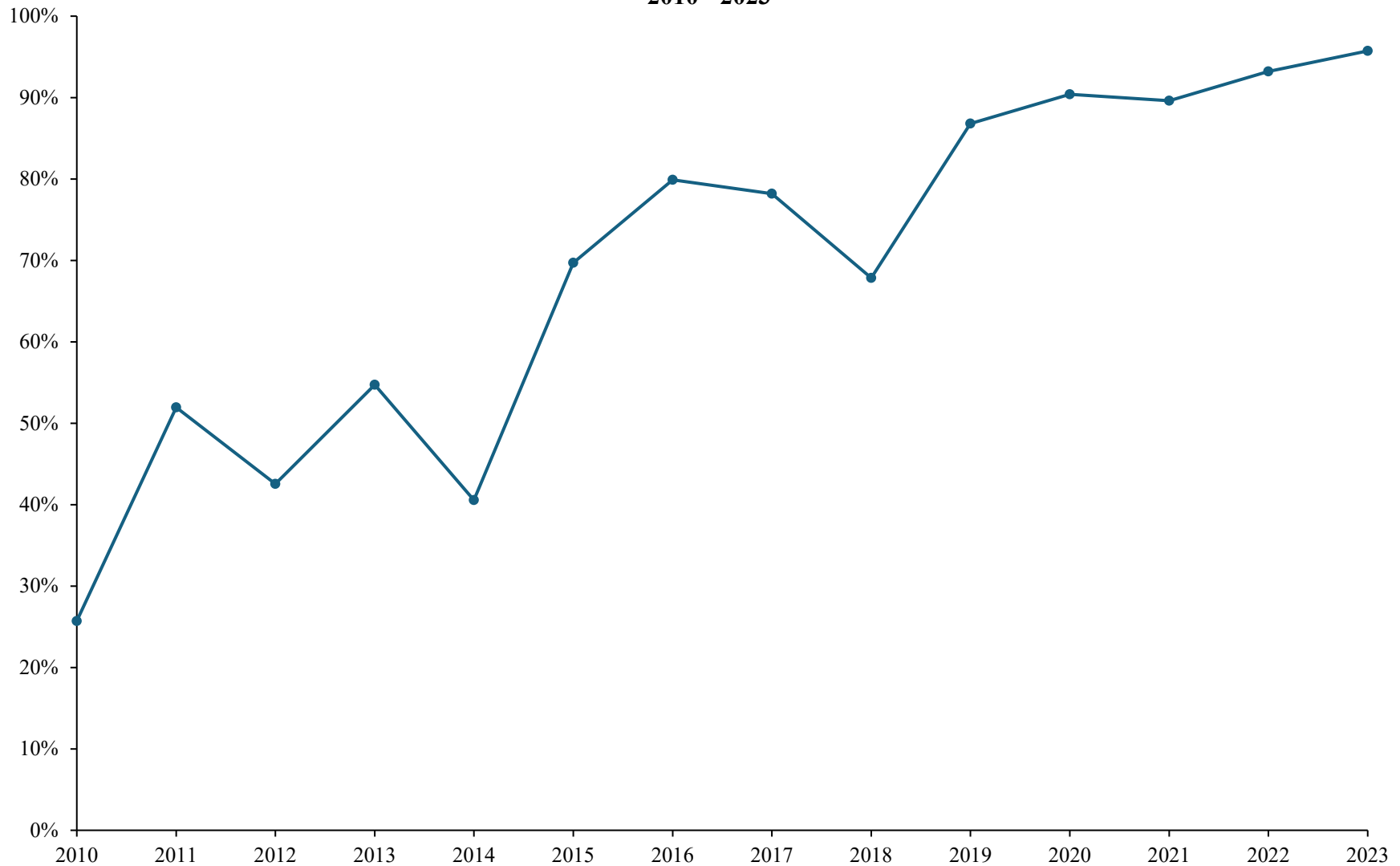
Sources:

[1] U.S. Patent No. 11, 349,291; U.S. Patent No. 10,177,551; U.S. Patent No. RE49,170; U.S. Patent No. D796,307; U.S. Patent No. D826,399; U.S. Patent No. 10,978,861; U.S. Patent No. 11,569,646; U.S. Patent No. D913,493; U.S. Patent No. 10,461,518; U.S. Patent No. 10,811,859; U.S. Patent No. D968,596; U.S. Patent No. 9,800,028; U.S. Patent No. 11,437,790; U.S. Patent No. D968,598; U.S. Patent No. D798,138; U.S. Patent No. 796,307; U.S. Patent No. D968,597; U.S. Patent No. 10,063,039; U.S. Patent No. D806,240.

[2] Priority Dates pulled from Google Patents.

[3] The following CAB Products are protected by U.S. Patents, EX1035 in IPR2024-00178.

Exhibit 6.1
Percent of Annual U.S. Utility-Scale PV Capacity Additions (MW_{AC}) from Tracking Systems
2010 - 2023



Source:
[1] Exhibit 6.2.

Exhibit 6.2
Annual U.S. Utility-Scale PV Capacity Additions (MW_{AC}) by System Type
2010 - 2023

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Fixed Tilt	130	234	552	607	1,884	874	1,483	891	1,274	607	924	1,298	706	768
Tracking	45	253	409	734	1,286	2,011	5,897	3,196	2,688	3,992	8,699	11,186	9,668	17,213
Total	175	487	961	1,341	3,170	2,885	7,380	4,087	3,962	4,599	9,623	12,484	10,374	17,981
<i>% Fixed Tilt</i>	<i>74.3%</i>	<i>48.0%</i>	<i>57.4%</i>	<i>45.3%</i>	<i>59.4%</i>	<i>30.3%</i>	<i>20.1%</i>	<i>21.8%</i>	<i>32.2%</i>	<i>13.2%</i>	<i>9.6%</i>	<i>10.4%</i>	<i>6.8%</i>	<i>4.3%</i>
<i>% Tracking</i>	<i>25.7%</i>	<i>52.0%</i>	<i>42.6%</i>	<i>54.7%</i>	<i>40.6%</i>	<i>69.7%</i>	<i>79.9%</i>	<i>78.2%</i>	<i>67.8%</i>	<i>86.8%</i>	<i>90.4%</i>	<i>89.6%</i>	<i>93.2%</i>	<i>95.7%</i>

Sources:

[1] Utility-Scale Solar, 2023 Edition, EX1056 in IPR2024-00178, p. 15.

[2] Utility-Scale Solar: Technology Trends, 2007-2023, EX1059 in IPR2024-00178.