



CommentNEPA

Auditable, Agentic Workflows with Feedback Alignment for Environmental Review

April 30, 2025

NAEP Conference 2025



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PNNL-SA-210567

Environmental Review is Encumbered

Labor-intensive review process for subject-matter experts (SME).

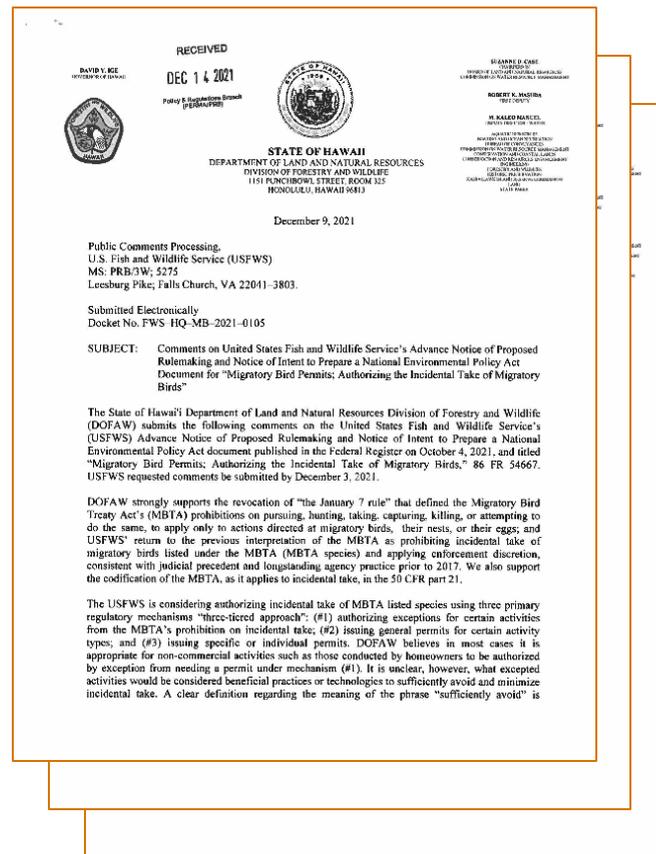
- 10s x 1000s of letters of public correspondence.
 - 1000s of hours (~5 min per comment).
- Years to complete permitting process.

Public use of generative AI increases volume of received correspondence.

Current Practice

For each correspondence:

- Bracket (non-)comments.
- Sort into bins.

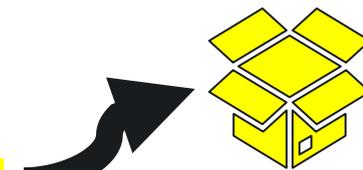


David G. Smith, representing the State of Hawai'i Department of Land and Natural Resources, Division of Forestry and Wildlife (DOFAW), supports the revocation of the January 7 rule and a return to the previous interpretation of the MBTA. Smith's background in wildlife conservation highlights his concern for incidental take of migratory birds, as indicated by the extensive data and recommendations provided in the correspondence, including specific examples of incidental take such as seabirds on O'ahu due to light attraction and varying take levels at wind facilities on Maui. DOFAW's key concerns include the need for clear definitions of "sufficiently avoid," rigorous project monitoring for impacts and infrastructure-related take, preference for compensatory mitigation over a general conservation fee structure for significant projects, and critique of using funds for project-specific monitoring. Smith emphasizes that these regulations would benefit migratory bird populations, help prevent their up-listing to threatened or endangered status, and streamline compliance and litigation efforts.

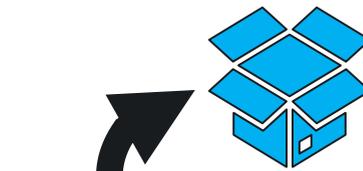


Tedious

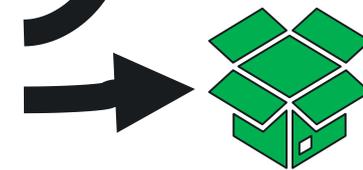
Time/Resource intensive



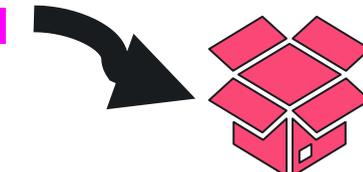
General Support



Compensatory Mitigation



Monitoring



Impact on Wildlife

Can Large Language Models Assist Review?

Simple (i.e., "chat-based") usage is unreliable:

- Inconsistent results.
- Difficult to explain.
- Difficult to control.
- Propensity to "Hallucinate".
- Risk of increasing SME labor.

Prior Work (April 2024)

For each correspondence:

- **Bracket** (non-)comments.
- Sort into **bins**.

Limitations:

- Inconsistent bracketing.
- Inconsistent category usefulness.

Single-shot LLM prompts:

- Generate a table...

Section	Commenter	Quote
B.1.2 Concerns	John Doe	"I am opposed..."
B.1.2 Alternatives	Jane Doe	"I request..."

- Identify comments

Commenter	Quote
John Doe	"I am opposed..."
Jane Doe	"I request..."

Our Work

CommentNEPA: Approach

Decompose workflow into simple subtasks:

- Summarize Correspondence.
- Extract Concerns & Quotes.
- Assign Bins.

Use self-evaluation loops.

- LLM generates and selects the best prompts for each task.

Store the graph of LLM inputs and outputs.

- Allow on-demand audit and feedback on all LLM outputs.
- LLM's self-evaluation is aligned with SME feedback.

Agentic Workflows

Inference-time scaling

Online learning

Auditable

Feedback Alignment

Key Features

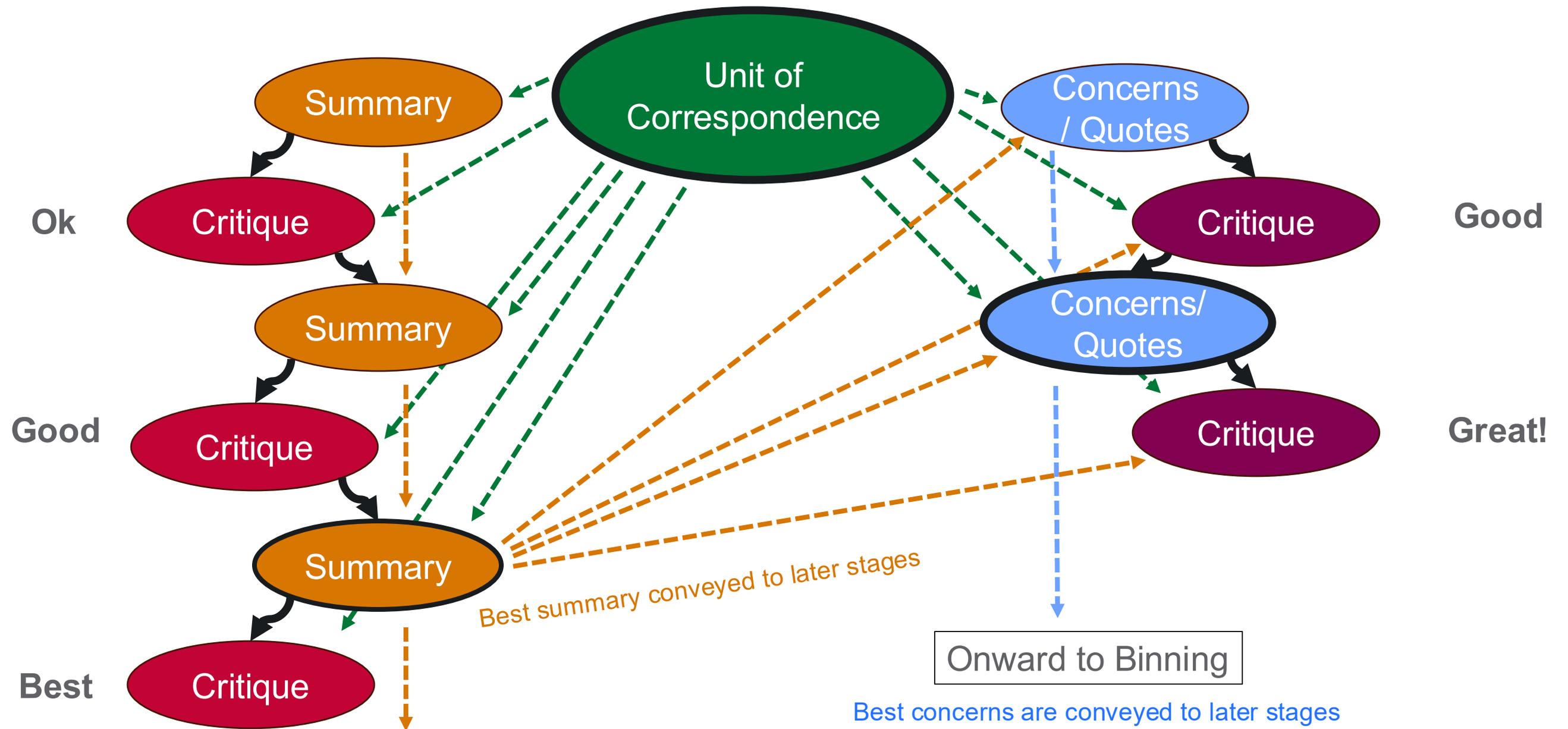
1. All outputs are auditable / traceable.
2. SME not an LLM-babysitter or “prompt-engineer”.

For each LLM output, we can, on-demand:

- Inspect it
 - And the prompt used to generate it.
 - And all inputs used to generate the prompt.
- Critique it
 - Feedback is used to optimize task prompts.
- Revise it
 - Feedback will be inferred from manual edits to output values.

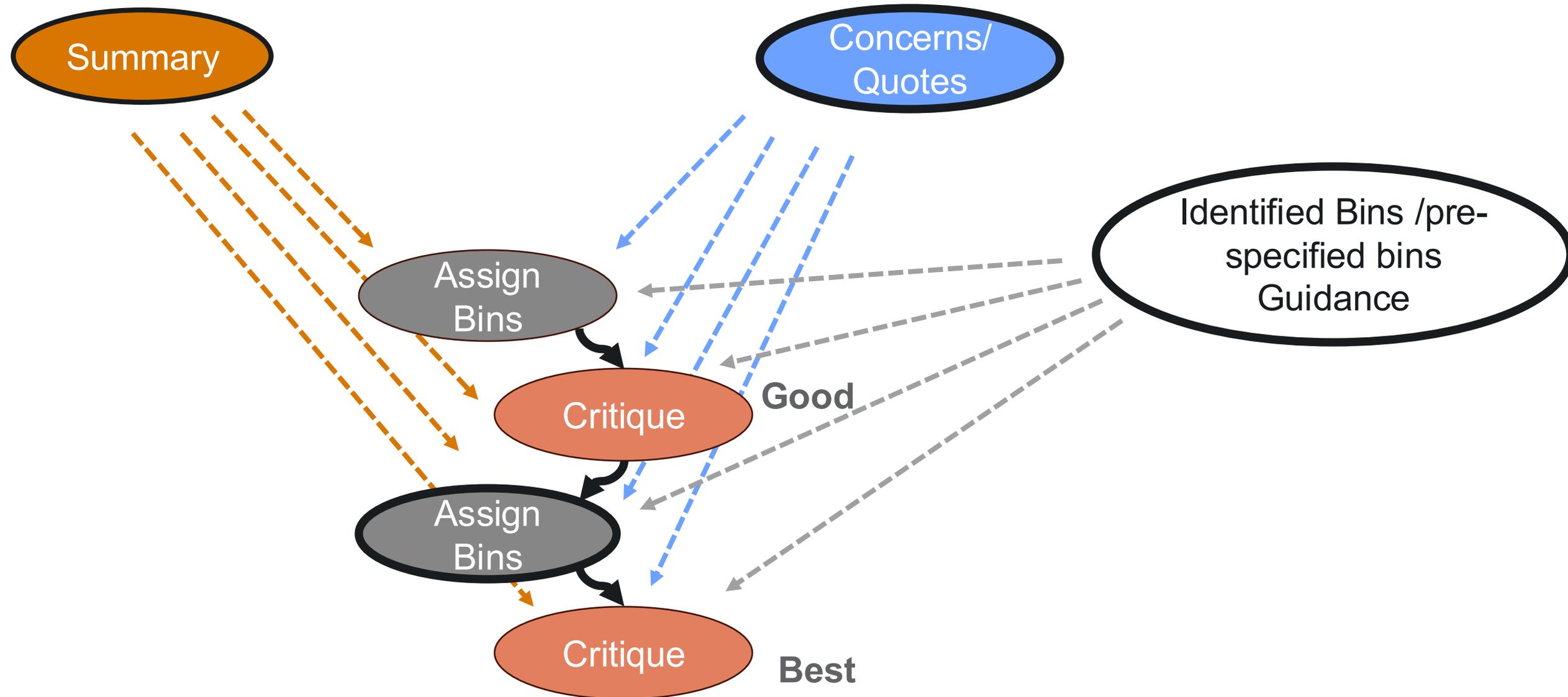
Subtasks: Summarization + Extract concerns

Pipeline with multiple LLM subtasks, including self-evaluation



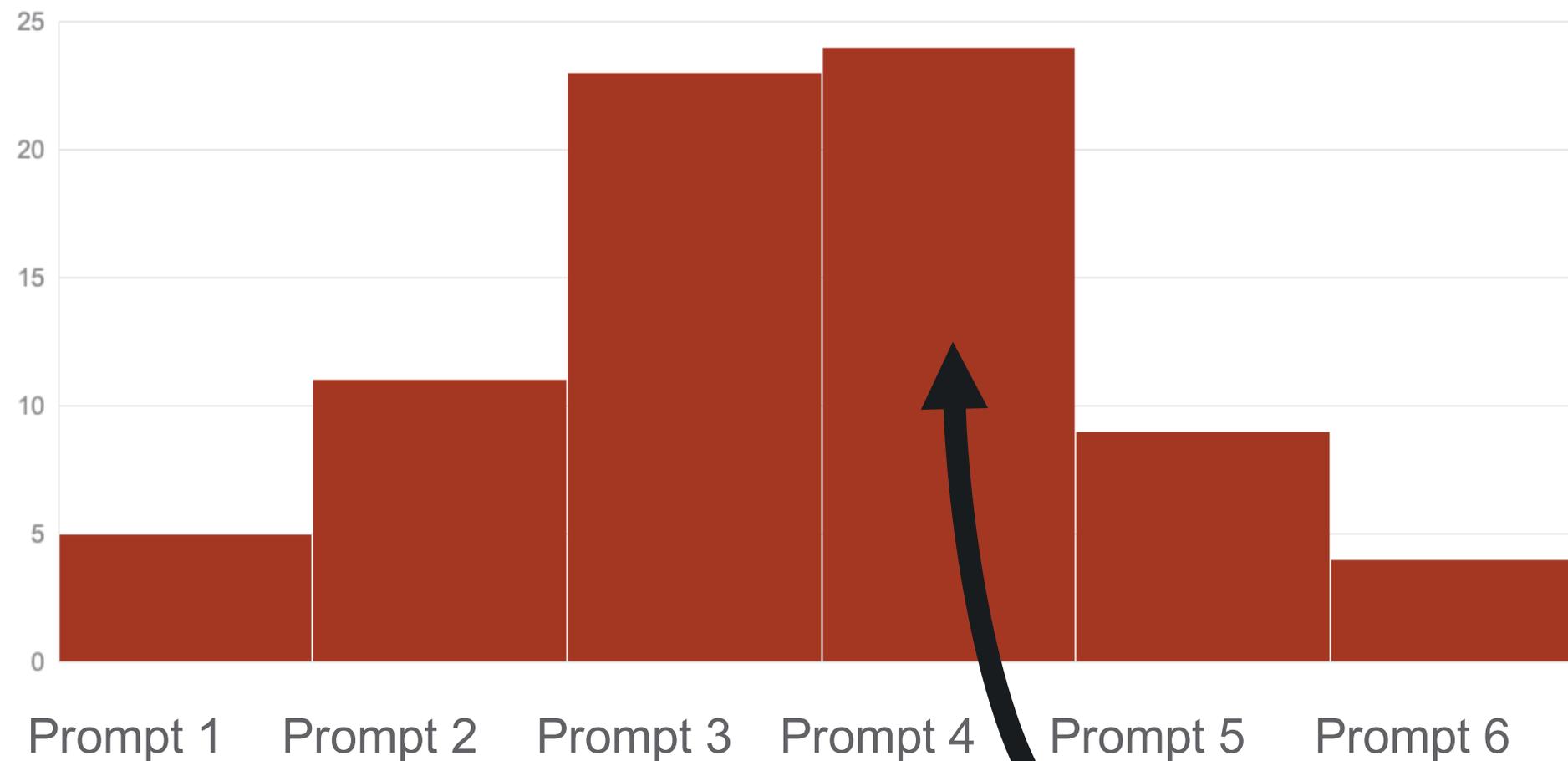
Subtasks: Binning

Pipeline with multiple LLM subtasks, including self-evaluation



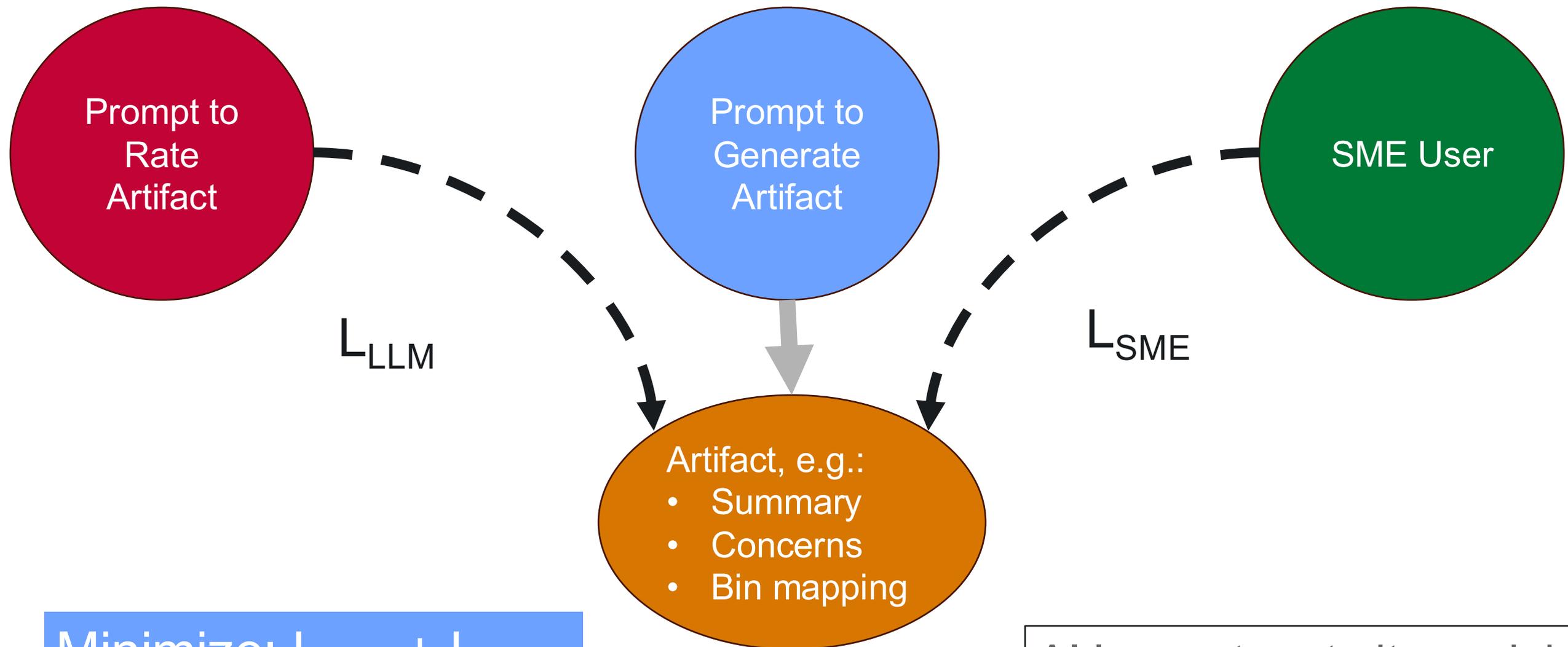
Self-Evaluation

Competition between prompts for each subtask.



Best performing prompt is used more often

Feedback Alignment

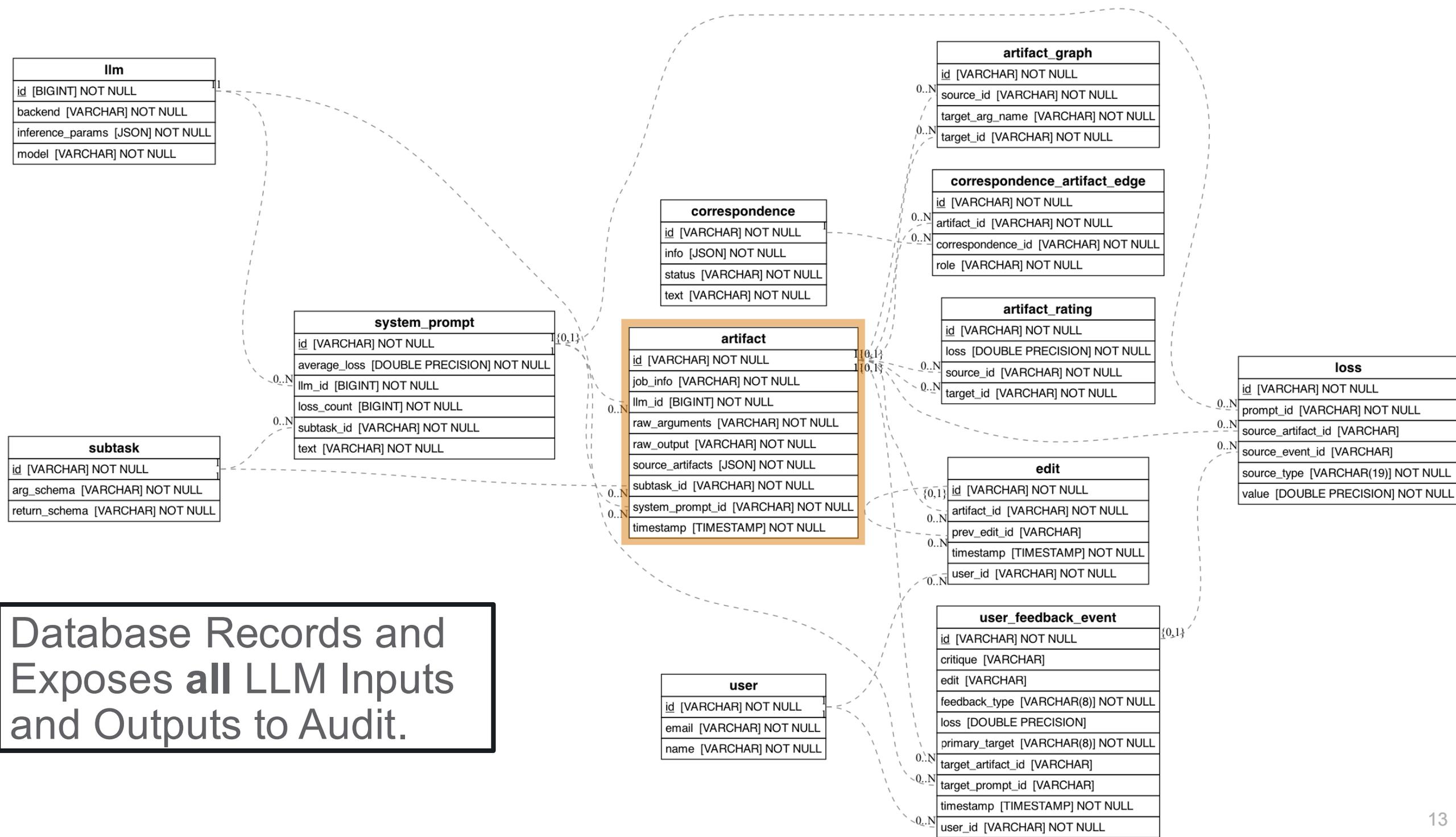


Minimize: $L_{LLM} + L_{SME}$

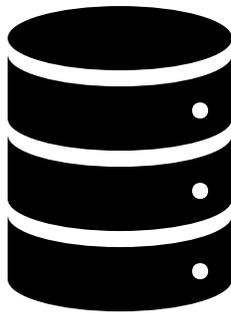
Minimize: $(L_{LLM} - L_{SME})^2$

AI learns to rate its work in the same way an SME would.

Traceability



Database Records and Exposes **all** LLM Inputs and Outputs to Audit.



LM Engineers its own Prompts

```
engineering_prompt = f"""\nYou an expert in giving instructions to large language models (LLMs). \nGiven a description of a task or function that a large language \nmodel should perform, you produce an optimal prompt with precise, \ndetailed instructions that will enable the LLM to perform the target \ntasks or function in a way that adheres to the desired output format \nand task description.\n\nYou will be provided with the following information about the target task:\n\nDescription of each input to LLM:\n{describe_model(AgentBlueprint)}\n\nGenerate instructions for the LLM using this information (to follow). The LLM \nwill read your instructions then the values described by `args_description`. \nIt must next produce the desired output in the correct format.\n\nNote that good instructions for an LLM typically specify its role and behavioral \nframework. Be clear and specific, providing necessary context, describing the \nprovided arguments, and detailing the desired outputs or evaluation criteria, so \nthat the LLM may successfully execute the following function or task:\n"""
```

From Task Declaration

- Optional guidance
- Describe input, output

```
global_context = """\
The public, which includes individuals, companies, agencies, organization, etc.
has submitted commentary in response to a PROPOSAL, and this correspondence must
be compiled and summarized to outline the scope of environmental issues \
potentially affected by the PROPOSAL.
```

```
When summarizing a unit of public correspondence (e.g., a letter, an email, \
etc.), it is vital that none of the author(s) concerns related to environmental \
impact (pollution; the disruption of habitat, resources, or infrastructure; \
issues of social, economic, environmental justice, etc.) are ignored. It is \
equally important that the summary is faithful to the source text, avoids \
manufacturing concerns, claims, or details that are not part of the original \
document, and does not editorialize, remark, analyze, or otherwise comment on \
the original content. The purpose of the summary is to distill the key concerns \
of the source text, expressing the author(s) key concerns with concision.
```

```
Note that the source document provided for summarization may contain artifacts \
of optical character recognition. When completing any task, do not add any \
additional markup, annotations, section headings, or other delimiters to the \
output.
```

```
# input
class ToSummarize(BaseModel):
    source_text: str = Doc("The submitted public correspondence to summariz")
    project_info: str = Doc("Additional information about the proposal")
```

```
# agent
class CritiqueSummary Agent[ToCritique, Critique], context=global_context)
    """Give feedback on a summary of a unit of public correspondence.
```

```
{
  "instruction": "Your role is to act as a critical reviewer for summaries of public correspondence related to environmental proposals. You will assess a provided summary of such correspondence in terms of conciseness, faithfulness to the source, and inclusion of all concerns without editorialization. You will rate the summary on a scale of 1 to 5 for each criterion: conciseness, faithfulness, and inclusion of all concerns. A higher score indicates a more effective summary. Provide your evaluation comments to guide the editor on necessary revisions. Additionally, the summary must be distilled from the original source text, avoiding any additional commentary, claims, or editorialization. Ensure that the summary captures all aspects of the environmental concerns mentioned in the source text, including those potentially impacted by pollution, habitat disruption, resource issues, or social and environmental justice without adding your own analysis or remarks. The summary should be formatted without any extraneous markup or annotations."
}
```

```
"input": {
  "source_text": "The community expressed concerns regarding the new hydroelectric plant's potential impact on the local ecosystem. Residents fear that the construction may lead to deforestation, affecting the habitat of several species and disrupting the natural water flow, leading to erosion and habitat loss. The community also worries about increased pollution levels and its impact on local wildlife. There's a strong demand for alternative energy solutions that do not compromise the natural environment.",
  "project_info": "Hydroelectric Plant Proposal",
  "summary": "Community feedback highlighted concerns about deforestation, habitat disruption, and water flow alteration due to the hydroelectric plant, along with worries about pollution and its effects on wildlife. There's a call for non-environmentally harmful energy alternatives."
},
"output": {
  "comments": "The summary effectively captures the key environmental concerns related to the hydroelectric plant proposal, including deforestation, habitat loss, water flow changes, and pollution. It's concise and avoids editorialization. Minor improvement could be made in specifying the type of alternative energy solutions requested by the community.",
  "ratings": {
    "is_concise": 4,
    "is_faithful_to_source": 5,
    "captures_all_concerns": 5
  }
}
```

LLM Generated its own synthetic example



Two Levels of Optimization

1. Iterate work in self-evaluation loop.

- Regenerate intermediate outputs with self-critique.

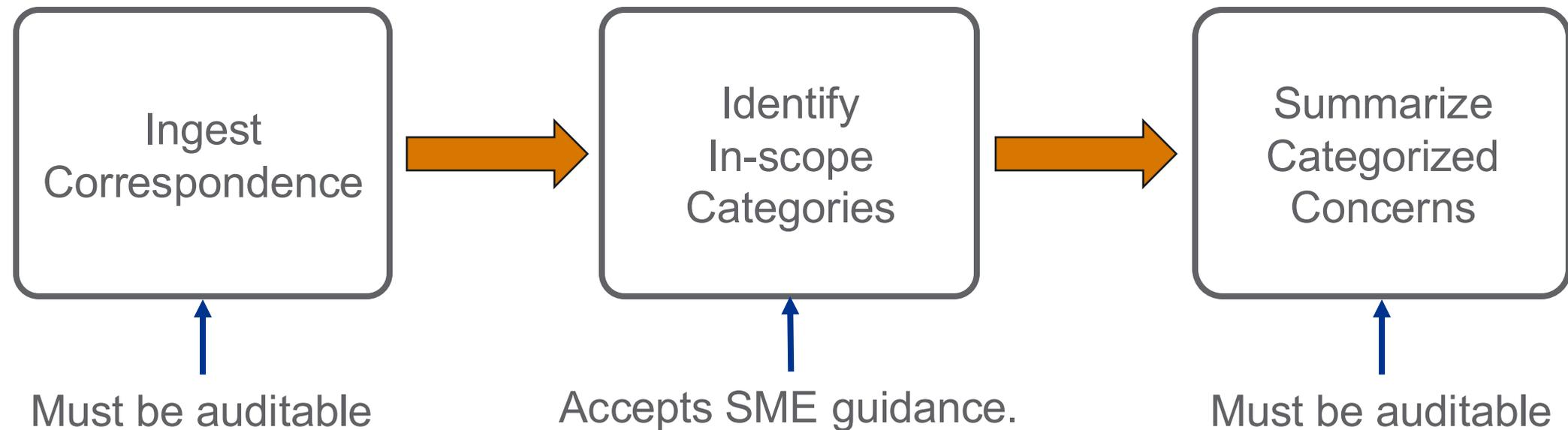
2. Learn better prompts over time.

- Self-Evaluation & User Feedback.
- Feedback alignment.

Interface

Stages of Pipeline

1. Identify comments from public correspondence.
2. Cluster into bins / categories.
3. Summarize bins, with references to original correspondence.



Iterated tasks learn from feedback.

Ingested Correspondence

Project A
colorado
Forest Service


PNNL An official website enabled by the Pacific Northwest National Laboratory
UN

CommentNEPA

PROJECTS

Project A

Project B

Project C

PROGRESS

Agency Scoping ✓

Comment Ingestion ✓

Comment Binning ✓

Comment Analysis

Report Out

Review

Correspondence	Comments
<p>Letter from Solectria Renewables, LLC</p> <p>163 comments</p> <p>Posted: Jun 24, 2024</p>	<p>OPPOSING TAX CREDITS</p> <p>"While the 45X production tax credit solves part of this problem, it is not sufficient."</p> <p>"The new Safe Harbor method enables Project Developers to qualify for the 10% Bonus Credit without purchasing U.S. manufactured Utility PV inverters. [...] In our opinion, this should not be permitted."</p> <p>"In our opinion, this should not be permitted."</p>
<p>Letter from Ingeteam Inc.</p> <p>57 comments</p> <p>Posted: Jun 6, 2024</p>	<p>"We are concerned that rigid domestic content requirements could delay the timely deployment of renewable projects."</p>
<p>Letter from Construction Innovations LLC</p> <p>54 comments</p> <p>Posted: July 22, 2024</p>	<p>"We believe that streamlining the tax credit process and eliminating unnecessary administrative hurdles is crucial to accelerating the clean energy transition while keeping costs manageable for customers."</p>
<p>Letter from Edison Electric Institute</p> <p>21 comments</p> <p>Posted: July 15, 2024</p>	<p>"As partners in the energy transition, utilities are committed to helping design policies that support the growth of renewables while maintaining reliable and affordable service for customers."</p>
<p>Letter from Solar Energy Manufacturers for America Coalition</p> <p>12 comments</p> <p>Posted: July 16, 2024</p>	<p>"The clean energy economy will benefit from a diversified supply chain, and we urge policymakers to consider the global nature of energy markets."</p> <p>"The current patchwork of tax credits and incentives can be difficult to navigate for utilities and developers. Simplifying these programs would make it easier to deploy renewable energy projects quickly."</p> <p>"We must be cautious about implementing policies that could inadvertently slow down renewable energy deployment or increase costs to ratepayers."</p>
<p>Letter from Trane Technologies</p> <p>11 comments</p> <p>Posted: July 16, 2024</p>	<p>FAVORING TAX CREDITS</p> <p>"From our perspective, the domestic content bonus credit is designed to incentivize PV project developers to purchase U.S. manufactured products instead of low-cost foreign sourced items."</p>
<p>Letter from Allco Renew. Energy Limited</p> <p>4 comments</p> <p>Posted: July 16, 2024</p>	<p>"Ideally, the bonus credit rules should ensure that project developers use only U.S. made Project Components whenever that is possible."</p>
<p>Letter from Solar Dynamics LLC</p> <p>4 comments</p> <p>Posted: July 16, 2024</p>	<p>"Solectria is the only survivor."</p> <p>"The IRA's incentives are a critical part of the transition to a clean energy future, and they provide the necessary financial support for both utilities and renewable energy developers to build a resilient grid."</p>
<p>Letter from SMA America</p> <p>1 comment</p> <p>Posted: July 12, 2024</p>	<p>"The IRA's tax credits are essential to the long-term success of renewable energy integration, allowing us to ensure reliable, affordable, and clean energy for our customers."</p> <p>"We support policies that enable both utilities and independent power producers to deploy renewable generation at scale, while also ensuring grid reliability and resilience against extreme weather events."</p>

Bins

COMMENT TOPICS

Construction - 3

Residential - 3

Solar thermal - 2

Photovoltaic solar - 1

COMMENT STATES

Colorado - 6

Nevada - 1

Oregon - 1

Texas - 1

Graph **Letter** Back Next

Call

Domestic Content Bonus Credit Amounts under the Inflation Reduction Act of 2022: Expansion of Applicable Projects for Safe Harbor in Notice 2023-38 and New Elective Safe Harbor to Determine Cost Percentages for Applicable Percentage Rule (Notice 2024-41)

Letter 06/21/2023 7:31 PM colorado

Subject: Comment from Solectria Renewables, LLC

U.S. Treasury Department & Internal Revenue Service

Dear Solar Industry Supporters,

Solectria Renewables, LLC (Solectria) is a leading U.S. PV inverter manufacturer with headquarters in Lawrence, Massachusetts. Our company was founded in 2004 and has been in business continuously for the past twenty years. In the early 2010's, the majority of domestic inverter manufacturers were driven out of business due to intense pricing competition from Asian imports. Solectria is the only survivor. In 2014, Solectria was acquired by Yaskawa America, Inc. (YAI), and we now operate as a wholly owned subsidiary of YAI.

The IRA Tax credits are pivotal to Solectria and to other domestic inverter manufacturers' long term future, as we continue to face predatory pricing challenges from foreign manufacturers. While the 45X production tax credit solves part of this problem, it is not sufficient. Stronger incentives are needed to encourage project developers to choose domestic inverters over the lower cost alternatives.

WHAT IS THE PURPOSE OF THE 10% BONUS CREDIT? From our perspective, the domestic content bonus credit is designed to incentivize PV project developers to purchase U.S. manufactured products instead of low-cost foreign sourced items. The program is meant to enable U.S. manufacturers to rapidly scale-up production and employment for long-term success in the PV market. Ideally,

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SME Audit and Revision

Project A
colorado
Forest Service


UN

CommentNEPA

PROJECTS

- Project A
- Project B
- Project C

PROGRESS

- Agency Scoping ✓
- Comment Ingestion ✓
- Comment Binning ✓
- Comment Analysis
- Report Out
- Review

Correspondence

Letter from Solectria Renewables, LLC
102 comments
Posted: Jun 24, 2024

Letter from Ingateam Inc.
57 comments
Posted: Jun 6, 2024

Letter from Construction Innovations LLC
34 comments
Posted: July 22, 2024

Letter from Edison Electric Institute
31 comments
Posted: July 15, 2024

Letter from Solar Energy Manufacturers for America Coalition
22 comments
Posted: July 16, 2024

Letter from Trane Technologies
11 comments
Posted: July 16, 2024

Letter from Alico Renew. Energy Limited
4 comments
Posted: July 18, 2024

Letter from Solar Dynamics LLC
4 comments
Posted: July 16, 2024

Letter from SMA America
1 comment
Posted: July 12, 2024

Comments

102 comments

OPPOSING TAX CREDITS

"While the 45X production tax credit solves part of this problem, it is not sufficient."

"The new Safe Harbor method enables Project Developers to qualify for the 10% Bonus Credit without purchasing U.S. manufactured Utility PV inverters. [...] In our opinion, this should not be permitted."

"In our opinion, this should not be permitted."

"We are concerned that rigid domestic content requirements could delay the timely deployment of renewable projects."

"We believe that streamlining the tax credit process and eliminating unnecessary administrative hurdles is crucial to accelerating the clean energy transition while keeping costs manageable for customers."

"As partners in the energy transition, utilities are committed to helping design policies that support the growth of renewables while maintaining reliable and affordable service for customers."

"The clean energy economy will benefit from a diversified supply chain, and we urge policymakers to consider the global nature of energy markets."

"The current patchwork of tax credits and incentives can be difficult to navigate for utilities and developers. Simplifying these programs would make it easier to deploy renewable energy projects quickly."

"We must be cautious about implementing policies that could inadvertently slow down renewable energy deployment or increase costs to ratepayers."

FAVORING INCENTIVES

"From our perspective, the domestic content bonus credit is designed to incentivize PV project developers to purchase U.S. manufactured products instead of low-cost foreign sourced items."

"Ideally, the bonus credit rules should ensure that project developers use only U.S. made Project Components whenever that is possible."

"Solectria is the only survivor."

"The IRA's incentives are a critical part of the transition to a clean energy future, and they provide the necessary financial support for both utilities and renewable energy developers to build a resilient grid."

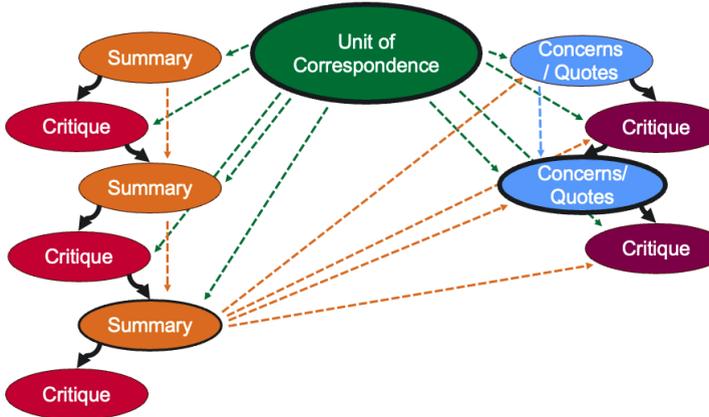
"The IRA's tax credits are essential to the long-term success of renewable energy integration, allowing us to ensure reliable, affordable, and clean energy for our customers."

"We support policies that enable both utilities and independent power producers to deploy renewable generation at scale, while also ensuring grid reliability and resilience against extreme weather events."

Graph Letter Back Next

Explore Comments and Rate AI Tasks

Click on node to inspect and provide feedback



NODE PROMPT

You are an environmental analyst tasked with endorsing the summary of public commentary on a proposal while ensuring it accurately reflects the concerns raised about environmental impacts. Your role is to critique the provided summary for any deviations from the source text, omissions of key environmental concerns, or any added editorializing. Your critique should be constructive, focusing on improving the summary's fidelity to the original document and its comprehensive coverage of environmental issues.

NODE RESPONSE

The summary provided is generally accurate and reflects the key points of Solectria's public commentary. It correctly identifies their support for incentives and opposition to tax credits. However, the summary could be improved by addressing the following points:

How well does the AI perform? Rating Submit

Rate AI performance.

Bins

COMMENT TOPICS

- Construction - 3
- Residential - 3
- Solar thermal - 2
- Photovoltaic solar - 1

COMMENT STATES

- Colorado - 0
- Nevada - 1
- Oregon - 1
- Texas - 1

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Summarize Bins for EIS

Project A | colorado | Forest Service | PNNL | UN

CommentNEPA

PROJECTS

- Project A
- Project B
- Project C

PROGRESS

- Agency Scoping ✓
- Comment Ingestion ✓
- Comment Binning ✓
- Comment Analysis ✓
- Report Out ✓
- Review

Download Report

EIS Appendix for Project A

Construction

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Residential

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Solar thermal

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Photovoltaic solar

Lorem ipsum dolor sit amet, lorem comprehensam te nam, nec at habeo consulatu definitionem. Nam omittam platonem volutpat an. Dicant commodo gloriatur id qui, sea delenit nominavi inimicus at. Ne eleifend dissentiet eam, atqui admodum ancillae est at, vix mazim labores vivendo an. Te facer blandit duo, eum vidisse veritus mediocrem at.

[Download](#)

AI can make mistakes. Check responses.

[Back](#) [Finish](#)

Partial Evaluation(s)

(Without SME Feedback)

Ground Truth Evaluation: Bracketing

250 letters of correspondence

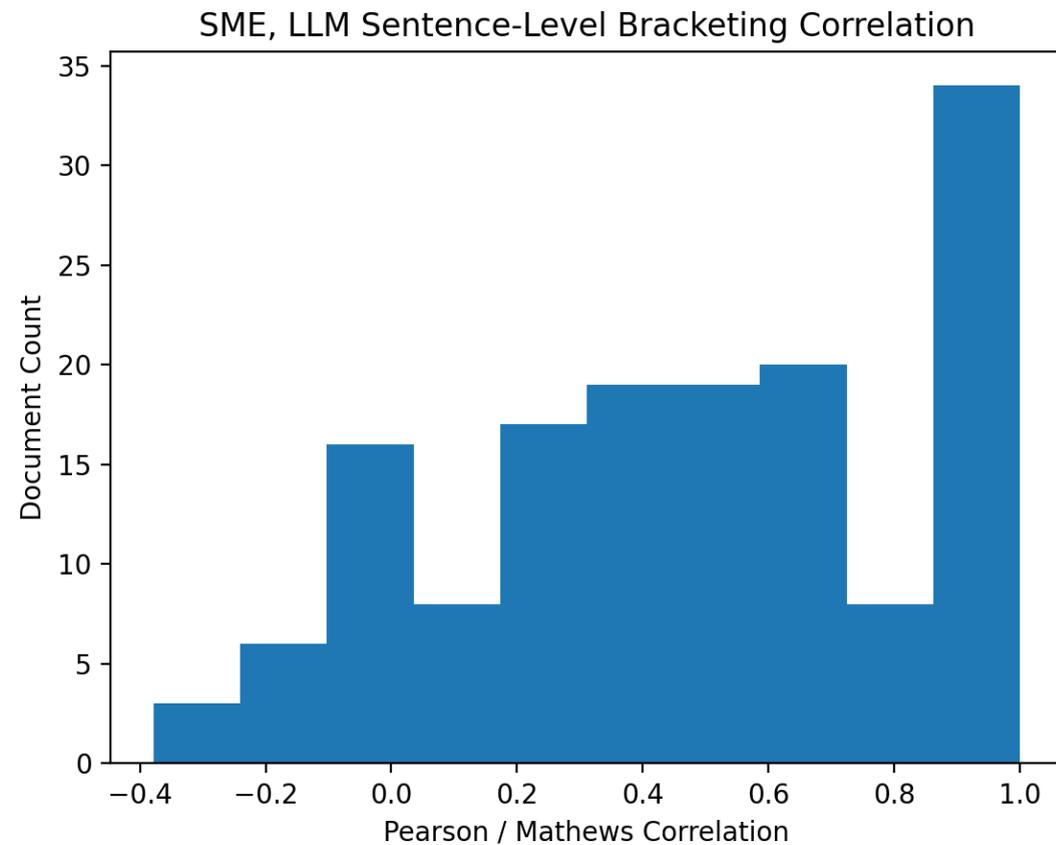
- ~5 min to execute.
- 150: BLM's Western Solar Plan [100: EPA's MBTA Proposal].

Binary classification (is/not comment) vs. SME selections.

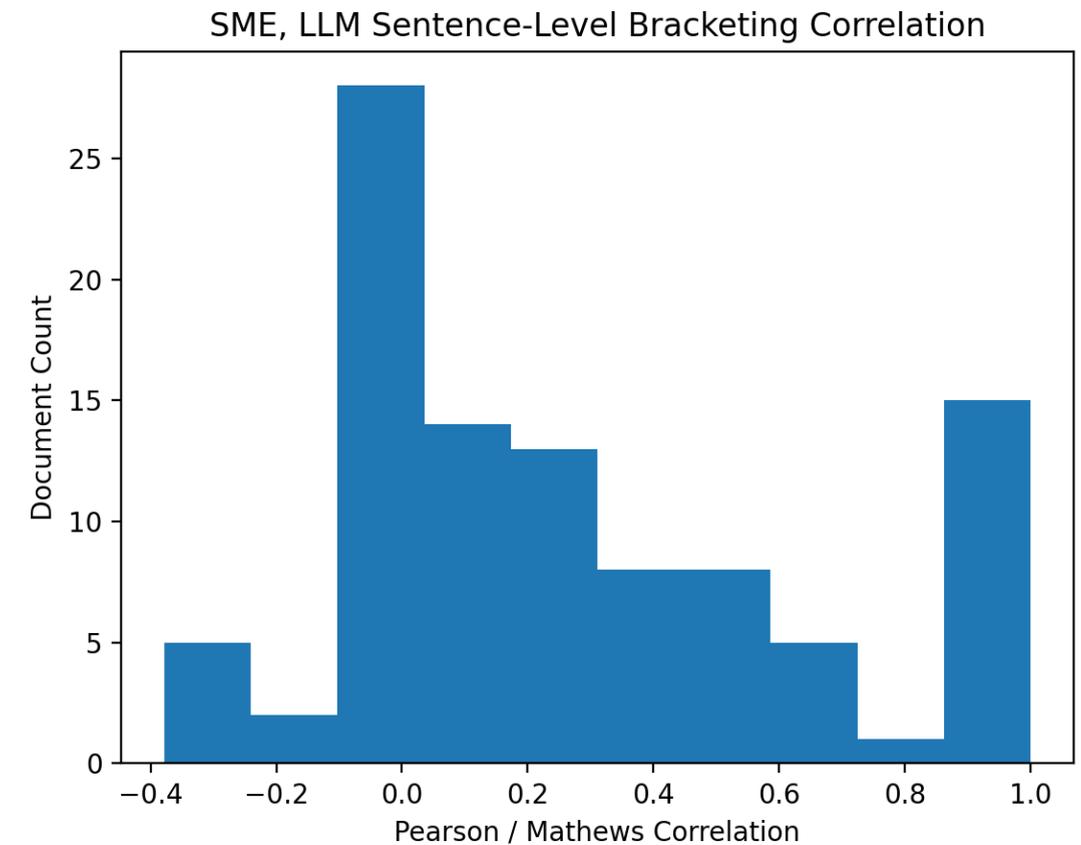
78 [79]% Precision, 20 [19]% Recall.

- *When LLM extracts comments, agrees with SME.*
- *SMEs tend to select more text than LLM.*

Bracketing – Correlation



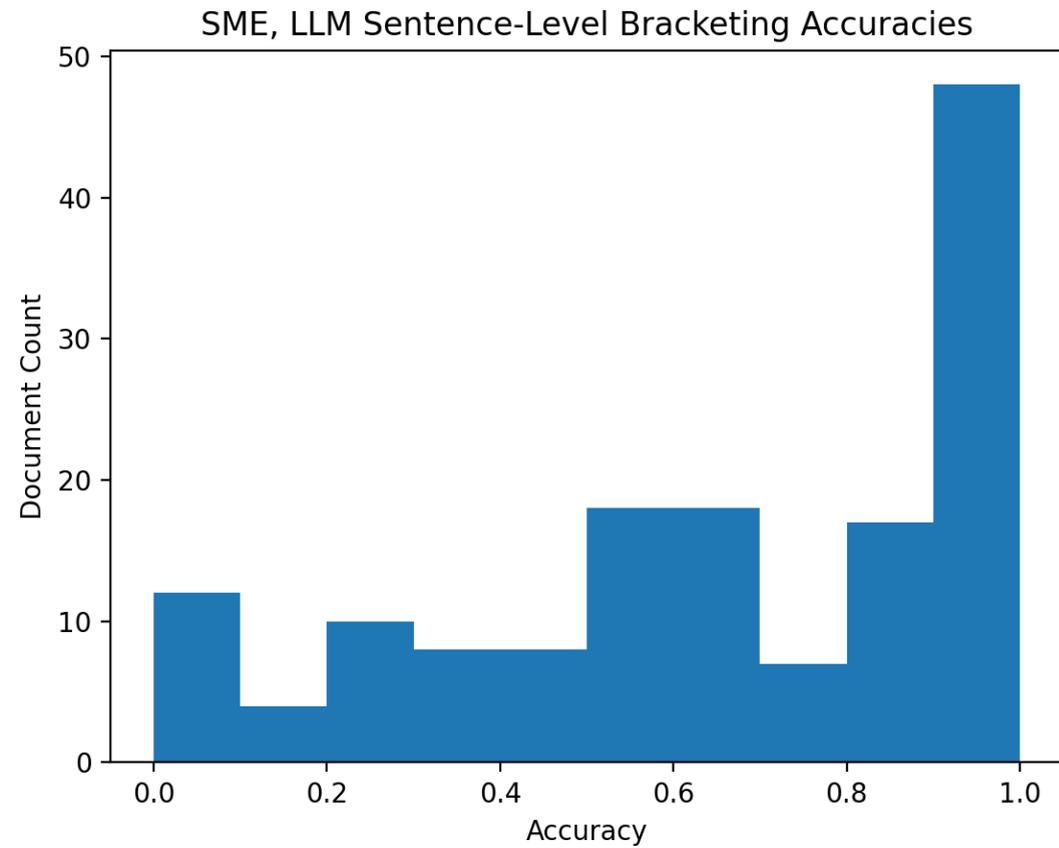
Bureau of Land Management
Western Solar Plan



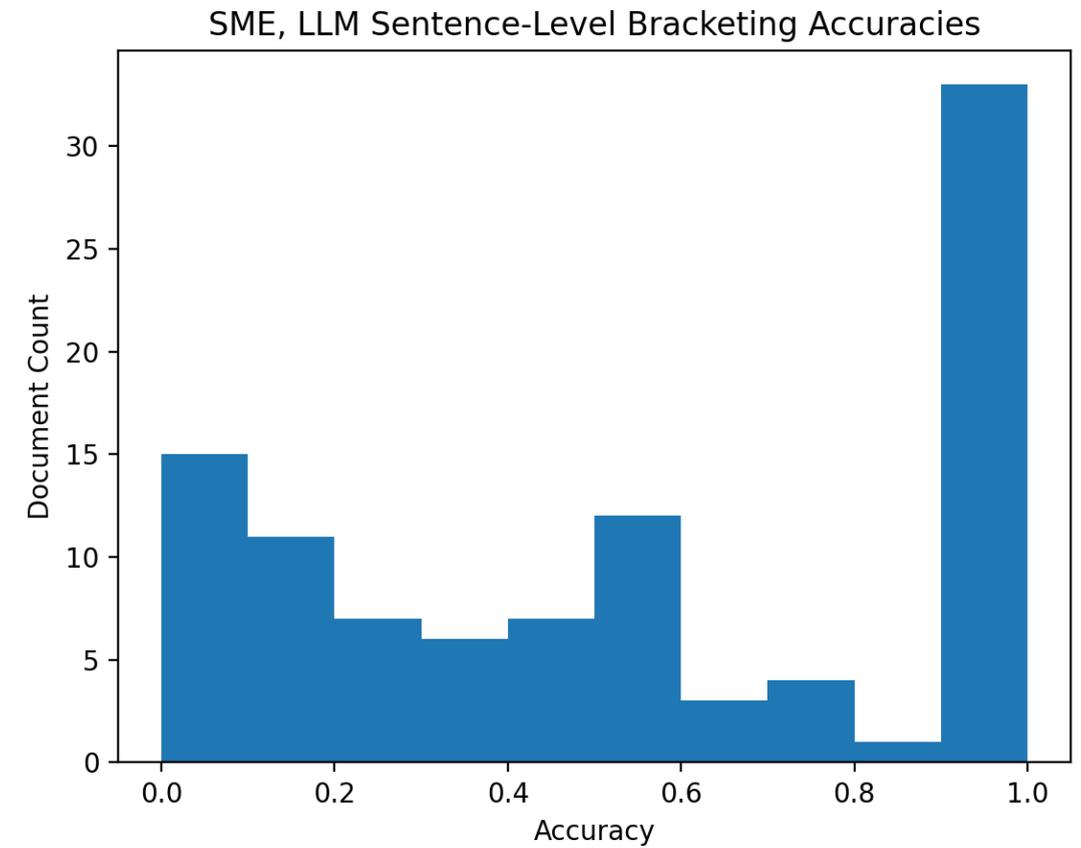
Environmental Protection Agency
Migratory Bird Treaty Act

Statistical correlation between LLM and SME labels

Bracketing – Accuracy



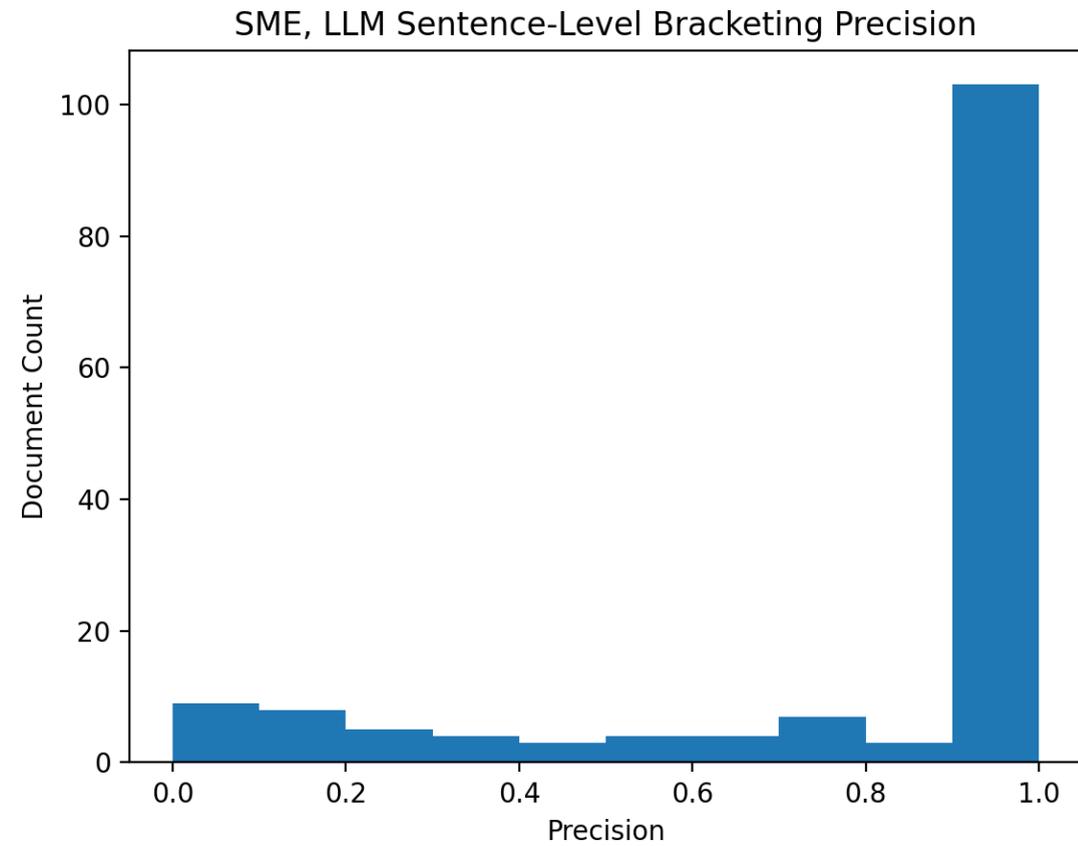
Bureau of Land Management
Western Solar Plan



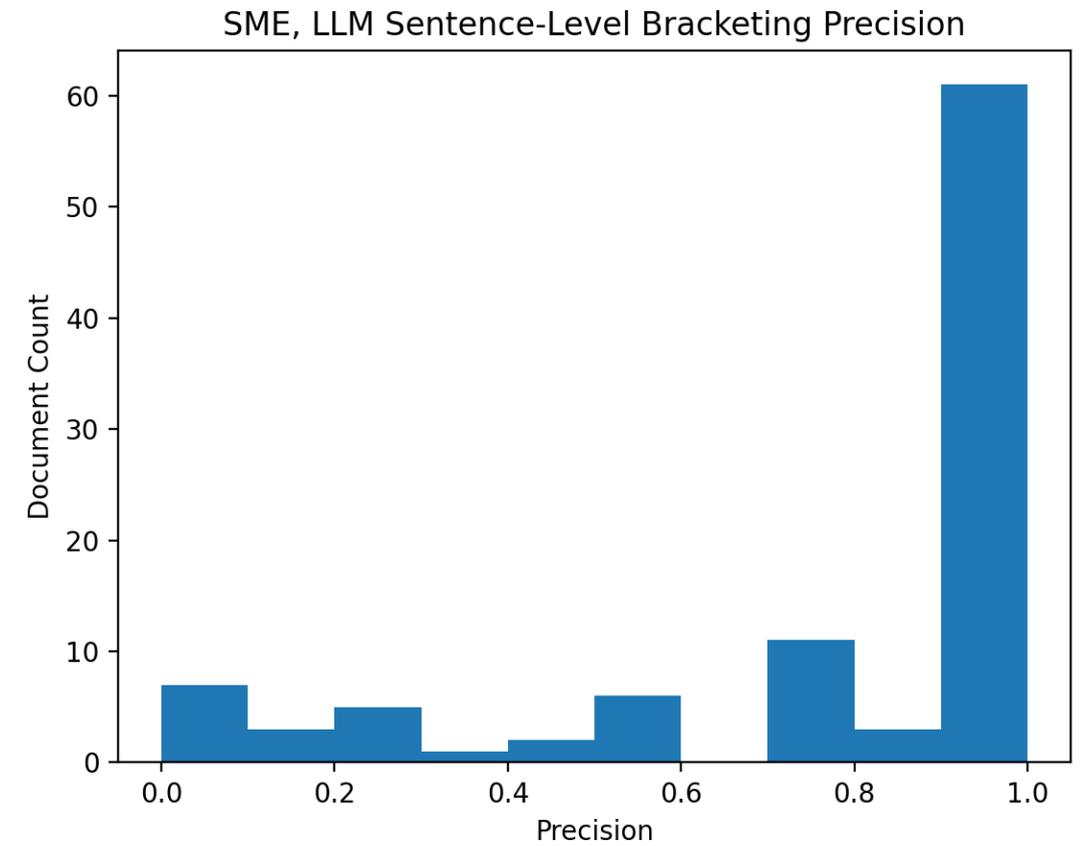
Environmental Protection Agency
Migratory Bird Treaty Act

Fraction of sentences labeled correctly

Bracketing – Precision



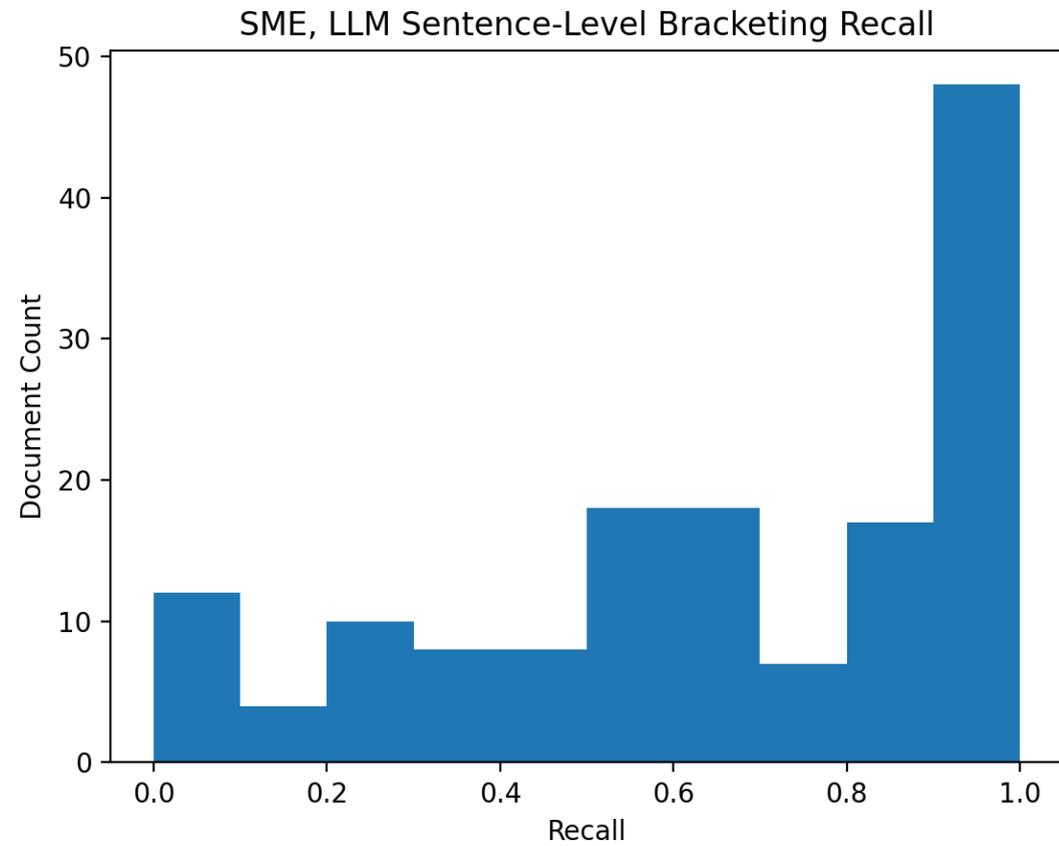
Bureau of Land Management
Western Solar Plan



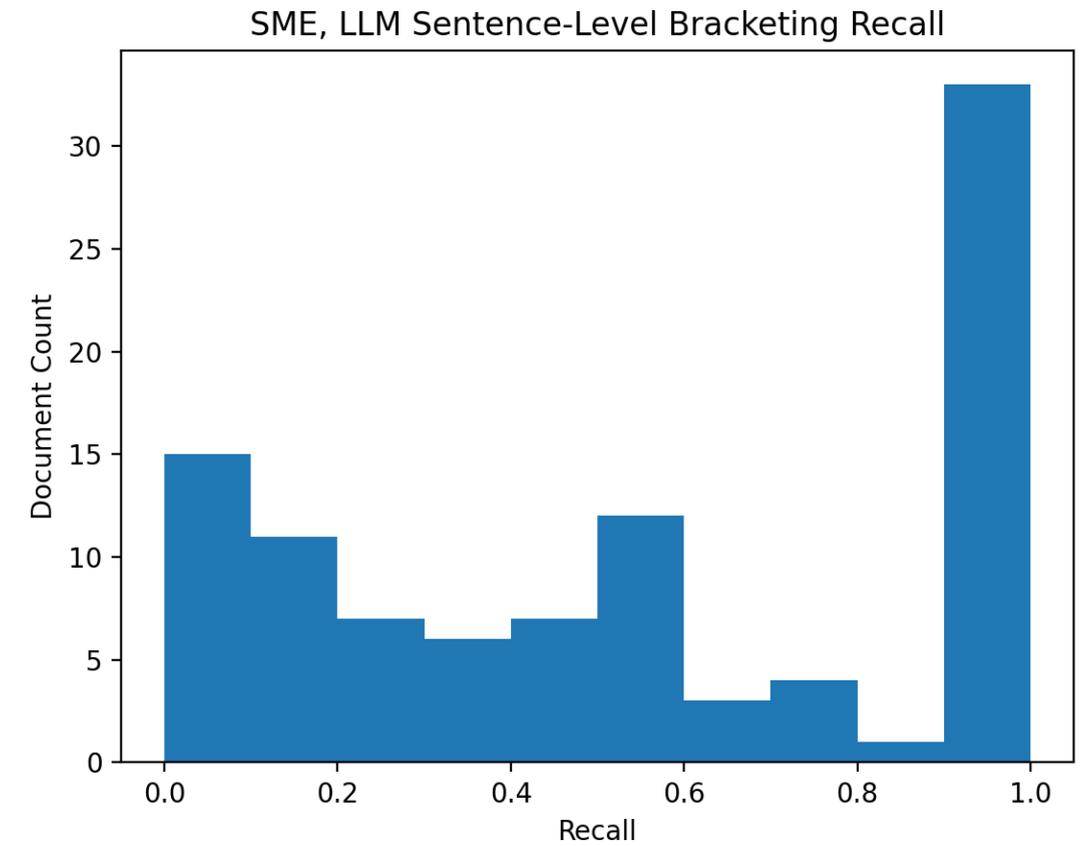
Environmental Protection Agency
Migratory Bird Treaty Act

Accuracy of LLM's positive predictions

Bracketing – Recall



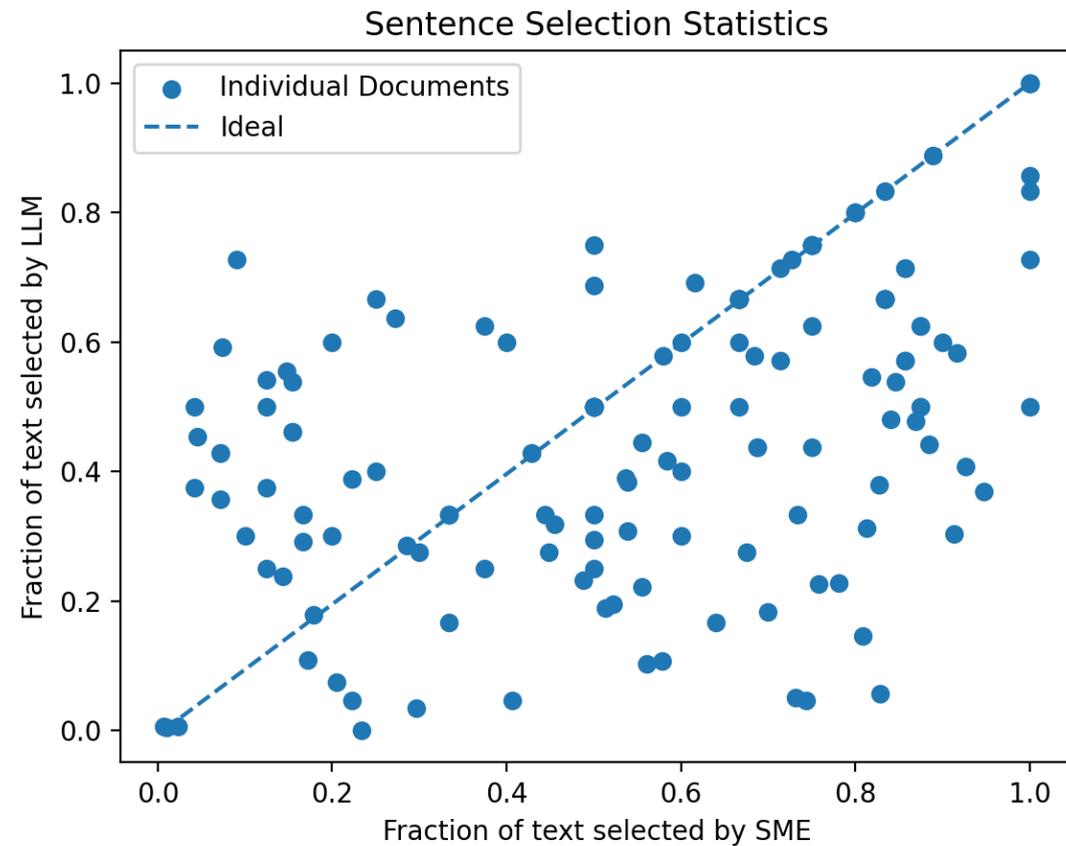
Bureau of Land Management
Western Solar Plan



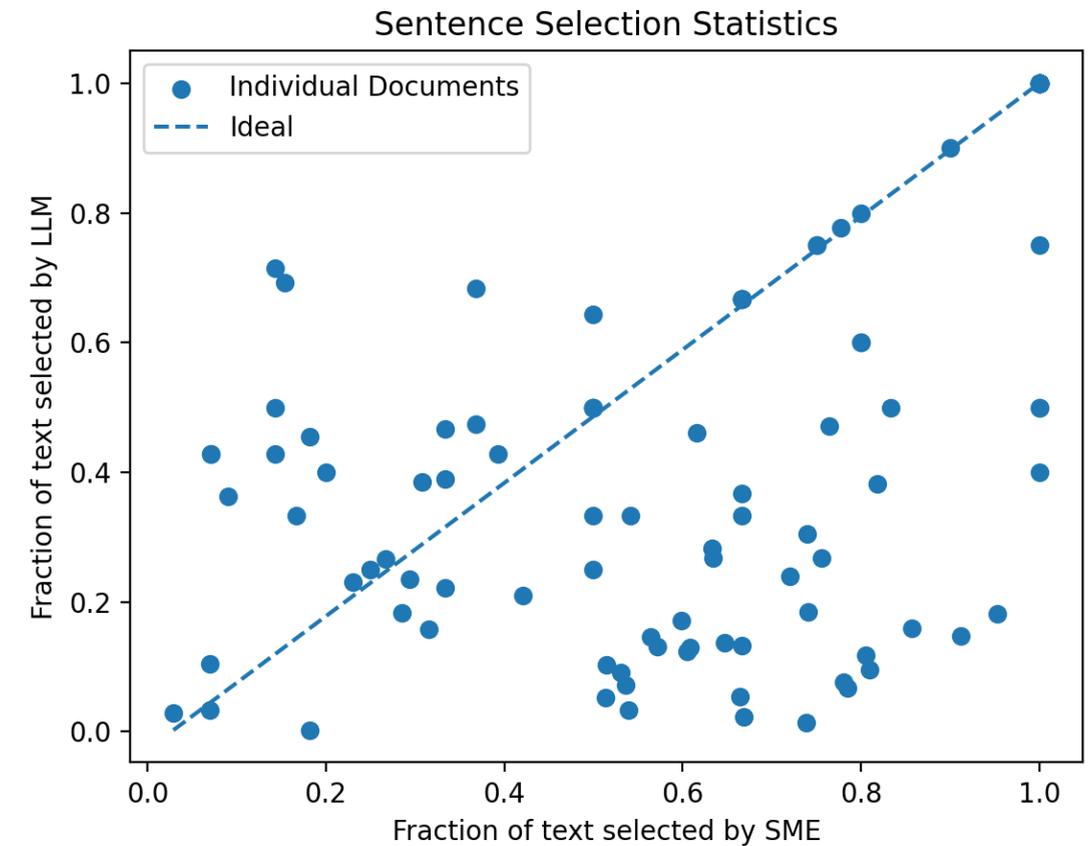
Environmental Protection Agency
Migratory Bird Treaty Act

Accuracy for examples labeled positive by SME

Bracketing – SME vs LLM sensitivity



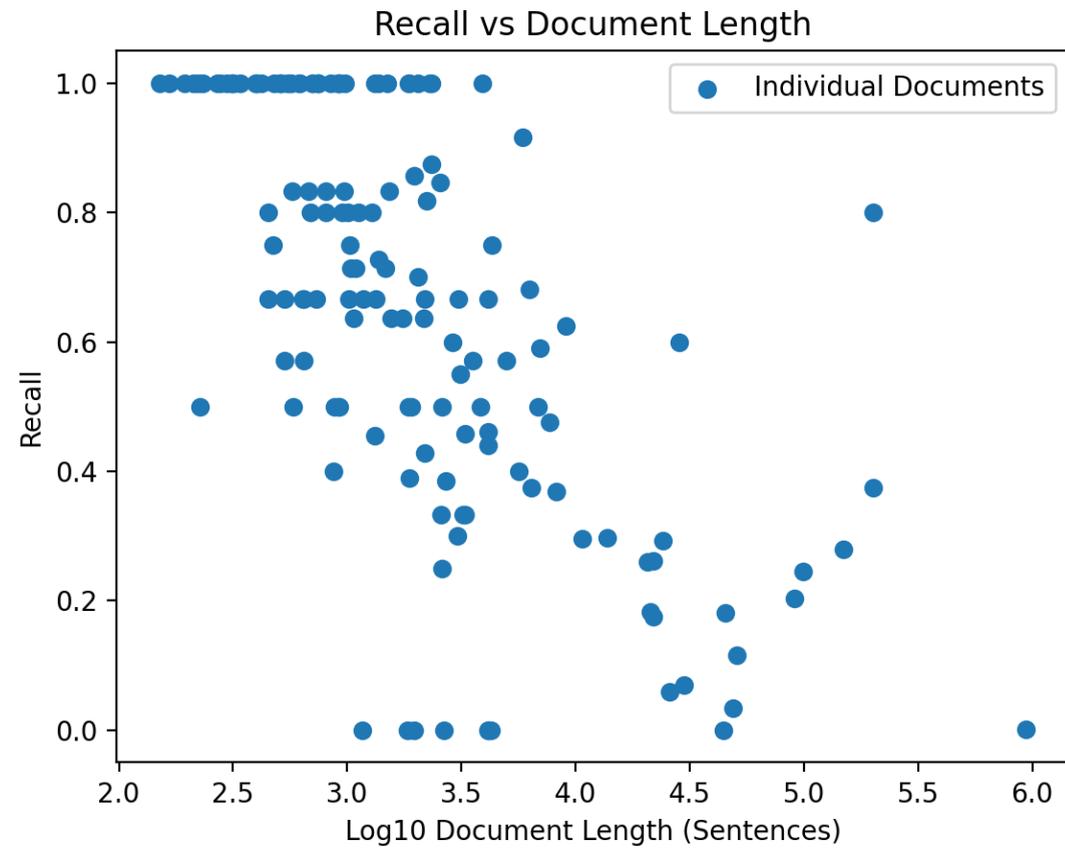
Bureau of Land Management
Western Solar Plan



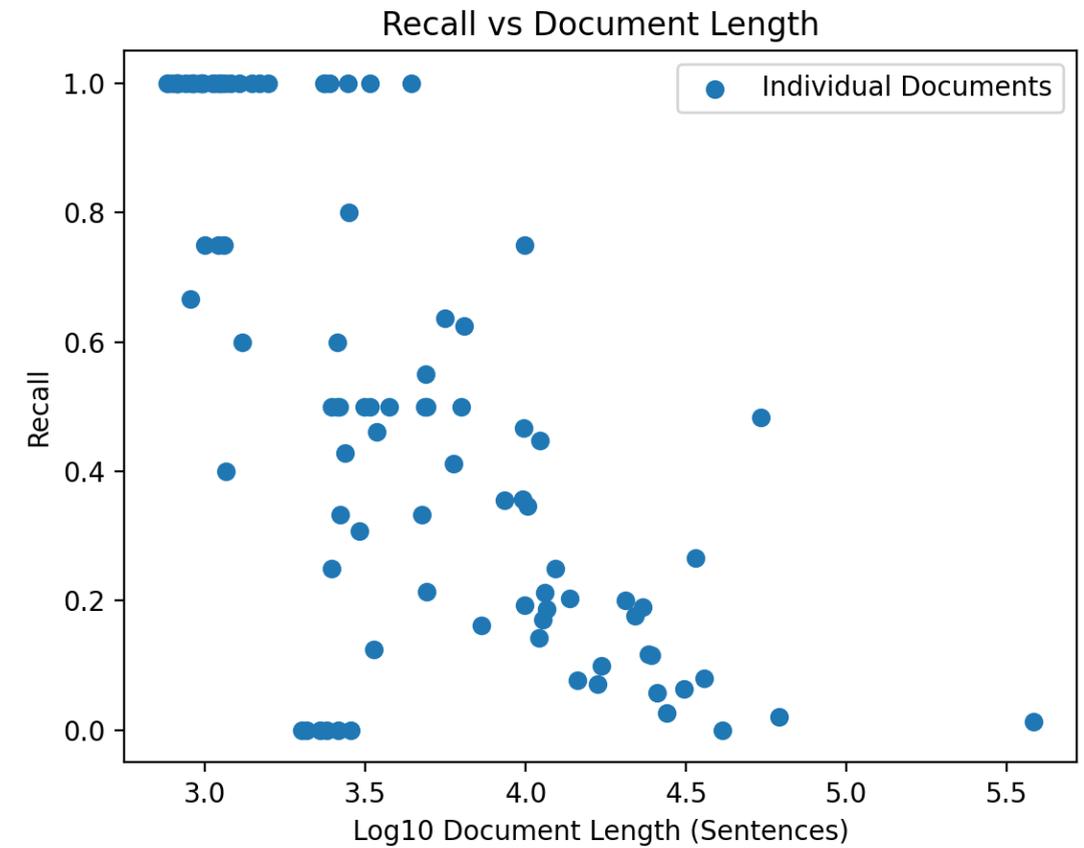
Environmental Protection Agency
Migratory Bird Treaty Act

Consistent bias towards lower fraction of selected text than SME

Bracketing – LLM Sensitivity vs Document Length



Bureau of Land Management
Western Solar Plan



Environmental Protection Agency
Migratory Bird Treaty Act

Decrease in sensitivity correlates with document length

Typical Example

Submission ID: Draft2024SolarPEIS-1-500680092 Author(s): (Not Provided) Comment: I have attached a file with my comments. One matter I did not discuss was how difficult it was to navigate the BLM's website for this proposal. No where did I actually find the PEIS; Instead, I found four Appendices to the PEIS here. <https://eplanning.blm.gov/eplanning-ui/project/2022371/570>. Likewise, the BLM offered no explanation of the status of this proposal, and its evolution. That would have been extremely helpful. Also, while, the Appendices each have links for participation, it's not clear why one should attach their comments to a particular appendix. Why isn't there a link for general comments on the proposal and why are we not able to see the comments submitted by others? That would have been enormously helpful. I know that the BLM can do better than this. Attachments: Comments on the BLM Solar.

Comments on the BLMs Utility-Scale Solar Energy Development PEIS/RMPA I fully support the BLMs efforts to make more public lands available for solar development but I cannot support the preferred alternative chosen by the BLM. Rather, I ask the BLM to choose alternative 5 with no provision for variances, or at least an extremely circumscribed provision for variances. In offering these comments I largely endorse the recommendations made by Dustin Mulvaney, in this recent post. <https://thebulletin.org/2024/04/expanding-the-bulls-eye-of-solar-development-on-public-lands/amp/> As Mulvaney points, out the BLMs preferred Alternative 3 would open 22 million new acres of public lands to solar development based largely on the proximity of those lands to transmission lines. Two other alterantives would limit development to 11 million acres and 8.4 million acres respectively. The first of these, Alternative 4, would focus development on disturbed lands; the second, Alternative 5, would account for both disturbed lands and proximity to transmission lines. Alternative 5 is the most sensible option here. While we may need to use more of our public lands to promote renewable energy development, the BLM should most certainly not open public lands that are largely undisturbed, or that are distant from a power line. Doing so will invite litigation. Plainly, initial efforts should focus entirely on lands that are both disturbed and near a power line. Alternative 5 still makes 8.4 million acres of public land available and these lands should plainly receive priority for solar development, even if they are not necessarily the public lands most prized by developers. The BLM also suggests that it might allow variances to Alterantives 3, 4, and 5. Apparently, this would allow a party to apply to the BLM to grant a solar development permit even if the location does not meet the standards set by these alterantives. The danger here is that the variance process could swallow the rule, and thus become the default method for gaining a permit. That would undermine the very purpose of restricting where development should be allowed to occur. Perhaps a narrow variance from the 10 mile power line distance, that would allow development within no more than 15 miles from a power line, would be appropriate where the BLM determines that the applicant has a sound plan for development that can successfully tie in to the grid. But no variance should be allowed that would permit development on undisturbed lands. The BLM proposal also fails to address the need to minimize the amount of public land that is needed to generate solar power and to ensure that other compatible uses are promoted where solar development occurs. Agrivoltaics is a term that has been coined to promote this concept. For example, bifacial solar panels installed vertically, allow for crops or grazing in between the rows of panels. See e.g., <https://cleantechnica.com/2023/11/08/bifacial-solar-panels-to-open-floodgates-of-agrivoltaic-potential/>, and <https://spectrum.ieee.org/agrivoltaics>. In addition to promoting multiple use of public lands, bifacial solar powers can generate up to 30% more power thus minimizing the amount of public land needed for a fixed amount of power production. Dustin Mulvaney also points out that solar development should pay more attention to land-sparing solar development alternatives. <https://desertreport.org/solar-energy-that-s pares-the-land/>. While many of the contaminated sites are not necessarily on public lands, Mulvaney cites research suggesting that contaminated and disturbed sites, including contaminated agricultural lands, abandoned landfills and mines, brownfields, and other previously disturbed sites [could] supply enough power to the United States many times over. The use of such lands for solar development could significantly reduce the burden of using our undisturbed public lands for such development. Although much of this contaminated land may be outside of the BLMs jurisdiction that does not excuse the BLMs failure to consider this alternative, since it is eminently reasonable, and directly relevant to the important goal of minimizing the burden of imposing industrial development on our public lands. As the Court of Appeals for the D.C. Circuit has held, the alternatives analysis required by NEPA is limited by what is reasonable available, but not by measures that the agency is able to adopt. *Natural Resources Defense Council v. Morton*, 458 F.2d 827 (D.C. Cir. 1972); see also proposed 40 CFR 1502.14(a), available at, 88 Fed. Reg. 49977 (2023). (These rules are expected to be finalized very soon.) Than you for the opportunity to offer these comments. I look forward to seeing a final decision that better reflects strong efforts to protect our public lands, even as it makes some land available for solar development.

Neither

Both

SME Only

LLM Only

Typical Example: Concerns identified by LLM

SME bins:

- Preferred Alternative
- Public Outreach
- Disturbed Lands
- Multiple Use
- Eliminating the Variance Process

LLM topics:

- The author suggests considering contaminated sites for solar development to reduce the burden on undisturbed public lands.
- The author opposes the BLM's preferred alternative (Alternative 3) because it would open 22 million acres of public lands to solar development.
- The proposal's failure to address minimizing land use and promoting compatible uses like agrivoltaics is a concern.
- The author advocates for Alternative 5, which prioritizes disturbed lands near transmission lines to minimize the impact on undisturbed lands.
- The author expresses concern about variances that could undermine the purpose of restricting development locations.

Atypical Example: LLM disagrees with SME

Submission ID: DraftSolarPEISVol1-1-500680384 Author(s): [REDACTED] Comment: see attached file. Attachments: 2024_04_18_MASGD_MPLC Solar Comments.pdf April 18, 2024 Tracy Stone-Manning Jeremy Bluma Director Division Chief, National Renewable Energy Office Bureau of Land Management Bureau of Land Management 1849 C Street NW 1849 C Street NW Washington, DC 20240 Washington, DC 20240 RE: Utility-Scale Solar Energy Development PEIS/RMPA (DOI-BLM-HQ-3000-2023-0001-RMP-EIS) To Whom It May Concern: Since the earliest settlement of the West, and particularly Montana, the main responsibility of the Montana Public Lands Council has been to develop and coordinate unified policy positions and regulatory actions that effectively represent Montana public lands grazing users. Of all the western states, Montana alone has a statutory network of State Grazing Districts, cooperative areas of diverse ownership that allow for the greatest use of range forage while conserving limited natural resources. Grazing districts are non-profit, cooperative associations of ranchers and farmers who raise cattle. The Draft Utility-Scale Solar Development plan is a high priority for land managers across the region. Livestock producers continue to utilize a mix of private, state, and federal lands to graze their cattle and maintain the resource values associated with the western landscape. This Programmatic Environmental Impact Statement (PEIS) raises concerns for these producers as the impacts to grazing, wildlife habitat, local communities, and land health will be far reaching. Livestock grazing benefits The agency itself explains exclusionary zones as, "areas of BLM-administered lands with known high potential for resource conflicts." Under Section 5.13.1.1.1 Livestock Grazing Direct and Indirect Impacts of Construction and Operations it's clearly laid out that livestock grazing and solar infrastructure are incompatible. Inherently, grazing and solar development are resource conflicts and therefore grazing lands should be defined as exclusionary areas. It is important to note that grazing lands are complementary resource areas because of the symbiotic relationship between soil and vegetative health, wildlife habitat, and livestock production. These values are all compatible with each other and contribute to improved landscape conservation while operating under the multiple use mandate (Russell et. al. 2015). The agency should look to utilize already degraded landscapes that cannot currently be managed under multiple use to reach the energy goals set by this administration. Alternatives The PEIS included a swath of alternatives, each with different priorities and therefore different impacts. Alternative 5 is undoubtedly the most comprehensive alternative, including limitations for landscape eligibility based on a myriad of factors. In Section 5.13.1.4.2 Action Alternatives, it is noted that 7% of grazing allotments could be affected by this project, while in Alternative 1, for example, only 1% of allotments have the potential to be impacted. We continue to push back on the sheer scope of allotments impacted under each alternative, but especially under Alternative 5. Infrastructure The PEIS outlines the idea that if new transmission lines are approved by the BLM in the future then land use plans can be amended to allow for ROW availability for solar applications. These areas are outside of the current scope of the project and therefore approval should not be included in this plan. It is extremely important, and required by law, that a robust analysis take place prior to the implementation of the current proposed utility scale solar plan. Thank you for the opportunity to comment. Sincerely, [REDACTED]

Neither

Both

SME Only

LLM Only

Divergent selections explained by concerns.

SME bins:

- Livestock Grazing

LLM-extracted concerns:

- The scope of grazing allotments that could be affected by the project under different alternatives is a concern.
- The inclusion of future transmission lines in the plan is a concern.
- The Draft Utility-Scale Solar Development plan raises concerns about impacts to grazing lands, wildlife habitat, local communities, and land health.
- Livestock grazing and solar infrastructure are incompatible, and grazing lands should be defined as exclusionary areas.

Future Directions

- More fine-grained evaluation across diverse use cases
- Natural language feedback and editing.
- Interactive binning / clustering.
- Directed prompt mutation.
- LLM-directed requests for SME feedback.

Thank you