

	Process Guide: Engineering Studies	Revision	1
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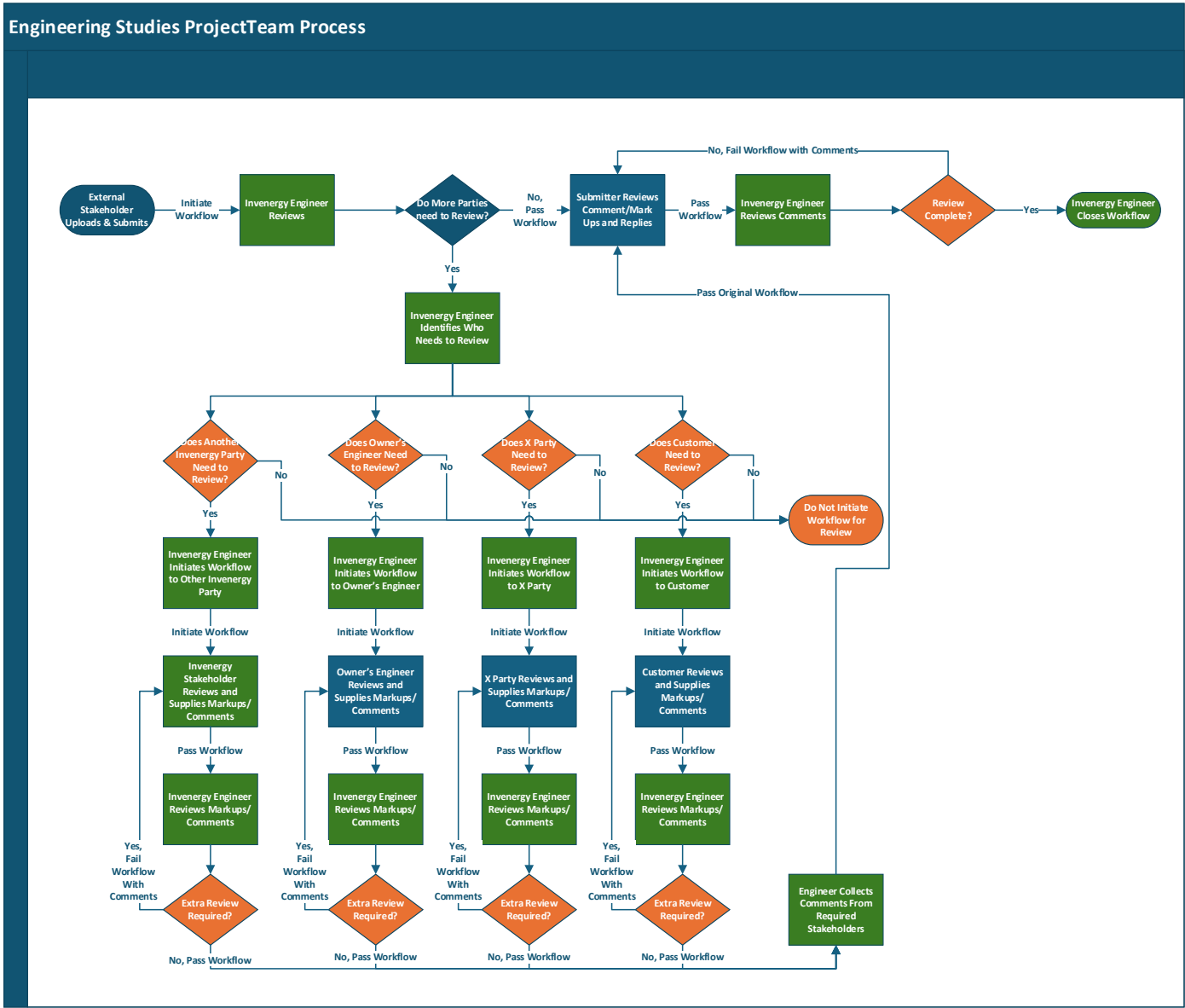
Engineering Studies

Purpose: This form is used to hold review process for engineering tests and study results to confirm that the current design of the project meets certain performance criteria, with the subset defined below:

Initiators: Contractors, Consultants, Engineer of Record (EOR)

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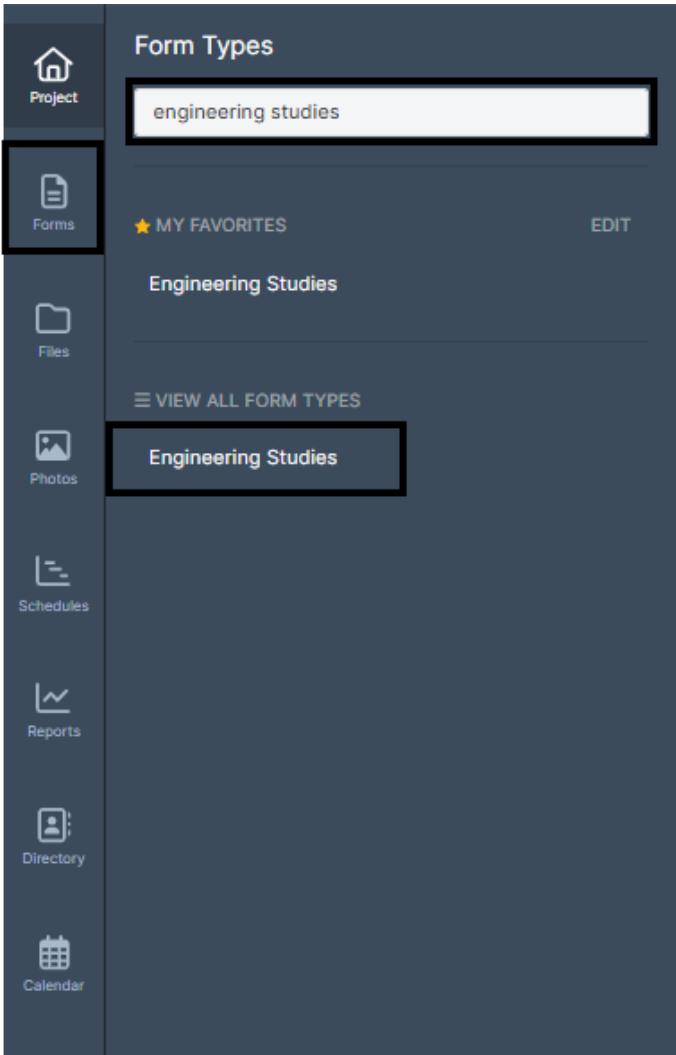
Engineering Studies Overview



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Creating a new Engineering Study

1. Select Form, type in “Engineering Studies,” then select the form.



2. Select “New” in the top right corner.

Engineering Studies shared with me

New

Print

...

☐	Subject ↑↓	Submitter Company ↑↓	Submitting Company Contact ↑↓	Revision ↑↓	Milestone ↑↓	Status ↑↓	Created On ↓↑	Related	Shared
☐	INV_Arc Flash Study_30%_RevA	Invenergy LLC	Ali Syed	A	30%	Submitted & Reviewing	8/6/24 12:17 PM	0 0 0	235

3. Fill out **all** fields above the “Review Comments” section: Subject (name of the document – should go off the naming convention), Revision, Submitter Company (from the

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dropdown), Submitting Company Contact, Scope of Work, Milestone, Status, and Status Updated By.

- Note: Milestone is specific markers in submissions, such as IRC/IFC/As Built, while revisions are iterations of the specific deliverable. Revisions should follow an alphabetical order until IFC and then switch to numbers at IFC and beyond.

4. Select a Status option in the dropdown.

- Collecting Comments**– study submitted; under review
- EOR Responding** – Comments issued; EOR preparing responses
- Processing Comment Responses** – responses received; reviewer filling “Status” and “Conclusion” Columns
- Revise and Resubmit**– Revision required; EOR to not advance to next % package or IFC requires revision
- Rejected** – Unacceptable quality; returned to Contractor with reason for rejection

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- **Accepted** – Accepted with no comments
 - **Accepted with Comments** – Accepted with minor comments for clarification or design changes
5. If the engineering studies relate to a drawing package in ProjectTeam, select “Add Existing” on the Studies Associated to Drawing Package section. Then select the drawing package that the study references.
 6. Select “Save & Start Workflow” in the top right corner. Make sure to select the workflow that fits this study’s Scope of Work the best. Selecting the relevant scope will ensure the Invenergy Discipline Engineer is notified for review.
 - a. Civil Scope: Project Engineer
 - b. Structural Scope: Project Engineer
 - c. Foundations Scope: Project Engineer
 - d. Mechanical Scope: Project Engineer
 - e. Electrical/Collection Scope: Electrical Engineer
 - f. Substation Scope: Electrical Engineer
 - g. Transmission Scope: Transmission Engineer & Electrical Engineer
 - h. SCADA Scope: SCADA Engineer & Electrical Engineer

Workflow Name & Description	Workflow Steps	Days for Prior Step to Take Action	Due Date for First Step
Engineering Studies Civil EOR to Invenergy Utilize this workflow to provide Engineering Studies to Invenergy	Engineering Studies Review Comments Invenergy → Review Engineering Studies Comments → Review Conclusions	3	Thursday, July 4, 2024
Engineering Studies Electrical EOR to Invenergy Utilize this workflow to provide Engineering Studies to Invenergy	Engineering Studies Review Comments Invenergy → Review Engineering Studies Comments → Review Conclusions	3	Thursday, July 4, 2024
Engineering Studies Structural EOR to Invenergy Utilize this workflow to provide Engineering Studies to Invenergy	Engineering Studies Review Comments Invenergy → Review Engineering Studies Comments → Review Conclusions	3	Thursday, July 4, 2024
Engineering Studies Substation EOR to Invenergy Utilize this workflow to provide Engineering Studies to Invenergy	Review Engineering Studies → Review Engineering Studies Comments → Review Conclusion	3	Thursday, July 4, 2024
Engineering Studies Transmission EOR to Invenergy Utilize this workflow to provide Engineering Studies to Invenergy	Review Engineering Studies → Review Engineering Studies Comments → Review Conclusion	3	Thursday, July 4, 2024

7. The Invenergy Discipline Engineer will initiate the respective workflow(s) to supplemental reviewers to provide comments in the table as shown below. Some typical workflows used are:
 - a. Electrical Engineer to Transmission Engineer
 - b. Electrical Engineer to Project Engineer
 - c. Transmission Engineer to Electrical Engineer
 - d. Transmission Engineer to Project Manager
 - e. Project Engineer to Transmission Engineer
 - f. Invenergy to Customer
8. After the Engineering Study has been reviewed and comments are collected, the Invenergy Engineer will start a workflow back to the initial submitter.

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9. Complete review with parties and circle back with other stakeholders as needed. Make sure stakeholders upload their markup copies of the Engineering Study in the Attachments section.
10. Once all comments have been closed and conclusions have been made, the Invenergy stakeholder will
 - a. Complete the open Workflows
 - b. Select the Closed box on the Engineering Studies form.
 - c. Lock the form, which prohibits any changes to the form
 - i. On the main page of the Engineering Studies form, click the ellipsis button and choose “Lock form fields”. NOTE: only ProjectTeam Admins can unlock the form after clicking the Yes button in the pop-up dialog that appears.
11. If a Revision is needed:
 - a. The EOR will upload the requested revision, as outlined by the “Status” - this would be a new upload with a “Rev _” in the name.

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Engineering Studies That Require Review

1. Utilize the “Review Comments” Section to log comments for Engineering Studies reviews/revisions.

Edit Engineering Studies

2. Download and markup document(s) with a markup tool and then upload the marked-up document(s) into the attachment section.
3. Utilize the “Review Comments” table for tracking comments, responses, and status of completion.
 - a. Import the markup comments into the “Review Comments” Table using the batch upload feature. Use the sections of the table highlighted in picture below.

Comments Table

	#	Page Label	File Name	Author's Company	Author	Comments	Responder (Company)	Responder (Contact)	Response	Status	Conclusion
☐	1	A0.1	BUILDING PLANS/ OC	Invenergy	Alex Golden	Misspelling on "Plan"					
☐	2	A0.1	BUILDING PLANS/ OC	Invenergy	Alex Golden	Confirm Markup on Drawing.					
☐	3	A1.0	GROUND FLOOR PLA	Invenergy	Alex Golden	Require an extra emergency exit on the west wall.					
☐	4	A1.2	ROOF PLAN	Invenergy	Alex Golden	Looks asymmetrical on western roof apex.					
☐	5	A1.1	SECOND FLOOR PLAI	Invenergy	Alex Golden	Need Walls in center hall to be 3' further apart					
☐	6	A1.2	ROOF PLAN	Invenergy	Alex Golden	What are the Lines in the markedup section.					
☐	7	A0.1	SECOND FLOOR PLAI	Invenergy	Alex Golden	Check Markup on Page. This should state 2nd floor Plan					

- b. Pass the workflow back to the submitter or next party in the workflow chain. If there are extra reviewers, allow them to make revision comments. If the next step is the original submitter, they should utilize the comment table to comment back to the reviewer's original comments. They should use the section of the table highlighted in

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the picture below. Once their review of the comments is complete, they can pass the workflow.

Comments Table

	#	Page Label	File Name	Author's Company	Author	Comments	Responder (Company)	Responder (Contact)	Response	Status	Conclusion
☐	1	A0.1	BUILDING PLANS/ OC	Invernergy	Alex Golden	Misspelling on "Plan"	Blattner Energy, LLC	Chloe Warsek	noted and fixed for next revision.		
☐	2	A0.1	BUILDING PLANS/ OC	Invernergy	Alex Golden	Confirm Markup on Drawing.	Blattner Energy, LLC	Chloe Warsek	This is here for X Reason, we cannot adjust.		
☐	3	A1.0	GROUND FLOOR PLA	Invernergy	Alex Golden	Require an extra emergency exit on the west wall.	Blattner Energy, LLC	Chloe Warsek	After Reviewing X Safety Regulation, we		
☐	4	A1.2	ROOF PLAN	Invernergy	Alex Golden	Looks asymmetrical on western roof apex.	Blattner Energy, LLC	Chloe Warsek	Will Look into this.		
☐	5	A1.1	SECOND FLOOR PLA	Invernergy	Alex Golden	Need Walls in center hall to be 3' further apart	Blattner Energy, LLC	Chloe Warsek	Walls look fine		
☐	6	A1.2	ROOF PLAN	Invernergy	Alex Golden	What are the Lines in the markdup section.	Blattner Energy, LLC	Chloe Warsek	Lines are for marking distance from X.		
☐	7	A0.1	SECOND FLOOR PLA	Invernergy	Alex Golden	Check Markup on Page, This should state 2nd floor Plan	Blattner Energy, LLC	Chloe Warsek	Will Adjust in next revision.		

c. Invernergy Stakeholder should validate if the review is complete by utilizing the comments table last 2 sections, "Status" and "Conclusion"

Comments Table

	#	Page Label	File Name	Author's Company	Author	Comments	Responder (Company)	Responder (Contact)	Response	Status	Conclusion
☐	1	A0.1	BUILDING PLANS/ OC	Invernergy	Alex Golden	Misspelling on "Plan"	Blattner Energy, LLC	Chloe Warsek	noted and fixed for next revision.	Comple... x	
☐	2	A0.1	BUILDING PLANS/ OC	Invernergy	Alex Golden	Confirm Markup on Drawing.	Blattner Energy, LLC	Chloe Warsek	This is here for X Reason, we cannot adjust.	Cancelled x	Item will not be adjusted
☐	3	A1.0	GROUND FLOOR PLA	Invernergy	Alex Golden	Require an extra emergency exit on the west wall.	Blattner Energy, LLC	Chloe Warsek	After Reviewing X Safety Regulation, we	Approved x	Add Emergency Exit on West Wall
☐	4	A1.2	ROOF PLAN	Invernergy	Alex Golden	Looks asymmetrical on western roof apex.	Blattner Energy, LLC	Chloe Warsek	Will Look into this.	Incompl... x	Found that the roof needs to be adjusted by 5
☐	5	A1.1	SECOND FLOOR PLAN	Invernergy	Alex Golden	Need Walls in center hall to be 3' further apart	Blattner Energy, LLC	Chloe Warsek	Walls look fine	Cancelled x	No issue found
☐	6	A1.2	ROOF PLAN	Invernergy	Alex Golden	What are the Lines in the markdup section.	Blattner Energy, LLC	Chloe Warsek	Lines are for marking distance from X.	Comple... x	Line is used to show specification restraint.
☐	7	A0.1	SECOND FLOOR PLAN	Invernergy	Alex Golden	Check Markup on Page, This should state 2nd floor Plan	Blattner Energy, LLC	Chloe Warsek	Will Adjust in next revision.	Incompl... x	

d. Status has 5 options to utilize, in which 3 are for review and 2 are for verification for revisions.

- Review Statuses: Use when initially reviewing response from Engineering Study submitter.
 - i. **Accepted:** Comment response is accepted and will be incorporated into a new revision.
 - ii. **Rejected:** Comment response is not accepted. Follow-up with the 3rd party needs to occur. Utilize failing the workflow with comments till approved or cancelled.
 - iii. **Cancelled:** Initial comment is to be disregarded. Use on comments that no longer apply based on the response and/or discussion with 3rd party.

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- Verification Statuses: Use when a revision has been submitted and verify if changes have been implemented
 - i. **Completed:** Approved comments have been addressed in next revision.
 - ii. **Incomplete:** Approved comments have NOT been addressed in the next revision.
 - Please note, the workflow is passed when the review period has been completed, NOT when all comment statuses are marked as “Accepted”. This will mean there may be multiple statuses in the comment log when the workflow is to be passed.
4. Close-Out
- a. For all workflows involving external parties, the relevant Engineer will be the last step in the workflow. The Invenergy stakeholders will review the Engineering Study and verify the review has completed and establish next steps for either revision or completion.
 - b. Once all Engineering Study workflows have been completed, the Invenergy engineer completing the workflow shall ensure the status field is updated.
 - c. The “Closed?” checkbox should be utilized to verify that the revisions requested have been implemented into the next iteration of the Engineering Study. When the current revision of the Engineering Study has been checked for these revisions, the “Closed?” box should be checked.

NOTE: The Invenergy Project Manager is ultimately responsible for ensuring all Engineering Studies are closed out, but other Invenergy personnel can assist with this process.

Creating a Revision

An Engineering Study Item will be revised throughout the design process. To maintain historical information, a new revision should be used rather than modifying the previous Engineering Study Item revision’s information and/or attachments.

Please note: A revision is NOT warranted when uploading attachments that were missed/omitted from an Engineering Study Item.

1. Open the Engineering Study Item that needs to be revised.
2. Click the “Create Revision” button on the top right of the window

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Eng. Studies and Document Controls

Below is an example of how Engineering Studies are processed in the form and stored within the folder structure.

When a project reaches Substantial and Mechanical completion, the Document Controls team will assess the status fields within the Engineering Studies Form. Once assessed that the forms have been officially completed, the Document Controls team will transfer all form attachments to the appropriate folder locations within the “Files” section of Project Team.

Example of file path to where the Engineering Studies will be stored once the status has been updated:

“Files” Section -> 03 Construction -> 07 Job Books -> Contractor Specific Job Books -> 02 Engineering

*The attachments will be stored within the folder structure under the corresponding scope, relevant to the contractor’s specific Job Books location. Screenshot on the Form will be attached (if applicable).

Document Controls is responsible for retrieving and archiving all final deliverables that fall under the following statuses:

- **Accepted**
- **Accepted with Comments**

Additionally, the “Closed?” box will need to be marked to ensure the Submittals has been fully completed.

Other statuses that can be chosen, but do not identify a “Closed” or Final form are as follows:

- **Collecting Comments**
- **EOR Responding**
- **Processing Comment Responses**
- **Revise and Resubmit**
- **Rejected**

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Team	Reviewed and Added Comments	Reviewed and Accepted
Electrical Engineering	Elizabeth Welch, Kevin Greene	Jim Barbee
Solar Engineering		Reilly Smith
Wind Engineering	Rose Martin	Jeromy Miceli
BESS Engineering		
Civil Engineering		
SCADA Engineering		
Transmission Engineering		
Project Management		Leslie Talamantez
Document Controls		Jeff Bialorucki