



**2024 Competition for NECA Student Chapters**  
**Electrical Contracting Innovation Challenge**  
**RULES AND REGULATIONS**

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## PROJECT OVERVIEW

ELECTRI International and the National Electrical Contractors Association (NECA) are pleased to announce the **16th Annual ELECTRI/NECA Student Chapter Competition**. The Electrical Contracting Innovation Challenge (ECIC) competition provides university students and faculty advisors with an engaging and fulfilling annual event that helps foster meaningful interaction among students, their local NECA Chapter, and NECA member companies.

### **ECIC Scenario:**

Each faculty advisor and student team will work with their local NECA chapter and contractors to deliver a proposal containing various building information modeling (BIM) tasks for the Trimble Phase 2 project. Students are to put themselves in the position of an electrical contractor and perform various tasks related to layout and coordination of various electrical systems in the project. The team will use the same computer software that industry leaders use for these purposes. During the competition, the student teams will tackle various challenges that BIM engineers face when completing a project. These challenges include creating a BIM execution plan, a detailed work assignment log, a prefabrication plan, installation drawings, and more. They will also have the opportunity to work with various forms of software that BIM engineers use in the industry. This will include modeling electrical systems using Revit, doing coordination in Navisworks and Trimble Connect, and leveraging technology solutions offered by Trimble for office and field construction professionals.

The student teams will work with their local NECA chapters and contractors to meet the project requirements by conducting interviews and scheduling office meetings (in contractors' facilities) to learn how electrical contractors have responded to similar past projects. It is highly encouraged and essential for the student teams to work closely with NECA electrical contracting partners for assistance and to identify means and methods that take into consideration real-world project parameters including schedule, cost, work force, weather, and other considerations unique to the project. All interactions with NECA chapters and contractors should be documented in the final proposal. This includes web or in-person meetings, training sessions, organized tours, jobsites visits, etc.

### **Competition Goals**

- Engage members of NECA Student Chapters in a rewarding educational experience.
- Challenge NECA Student Chapter teams to develop skills vital to careers in the electrical construction industry and professional skills in time management and oral/written communication.

- Foster an interest among NECA Student Chapters in opportunities for meaningful engagement with their local NECA contractors and NECA chapters.
- Provide a mechanism for NECA Student Chapters to create enthusiasm at their university about student chapter membership and eventual careers in the electrical construction industry.

### **Competition Format**

Working with local NECA chapters and contractors, student teams are challenged to submit a BIM Execution Plan, installation drawings and prefabrication plans. Student teams will be asked to provide building information models that have been coordinated against other trade and design models. Students will also be required to leverage other technologies such as robotic total stations and the Trimble XR-10 to improve communication across the project team, helping ensure an on-time project delivery.

Throughout the challenge, students will face real-world scenarios that project/BIM engineers frequently encounter. Students will not only be expected to review plans and navigate 3D models but also actively author/create 3D models and resolve clashes with other project stakeholders. Students will be encouraged to think outside the box to leverage technologies to identify innovative solutions/workflows to common challenges faced in the preconstruction, construction and occupation/operations phases.

This competition has been designed to help students gain valuable job skills and experience from local NECA contractors who can assist them in their future careers. ELECTRI anticipates the student teams will gain a new level of respect for the entire construction process and the important roles each project stakeholder plays during the design and construction phases of a project.

Each team's written proposal will be judged by NECA contractor members and industry partners who will select the finalist teams to invite to attend the NECA 2024 Annual Convention in San Diego, CA from September 28<sup>th</sup> through October 1<sup>st</sup>. On site, the finalist teams will each make a 15-minute oral presentation followed by a question/answer session to a group of judges from the EC industry who will determine the overall Electrical Contracting Innovation Challenge winner.

In addition to the awards for best student team project, ELECTRI International will present team awards of \$500 each, open to every team that submits a full proposal: Most Detailed Building Information Model and Most Influential Media Campaign. For Most Innovative Use of XR-10 there will be an award of \$1,000.

## 2024 COMPETITION SCHEDULE

November 21 <sup>st</sup>	Competition Rules and Regulations delivered to NECA Student Chapter Advisors
<b>January 1<sup>st</sup></b>	<b>Registration opens for ECIC 2024</b>
January 23 <sup>rd</sup>	Webinar with ECIC jury and ELECTRI Staff who will answer questions regarding the 2024 Challenge.
February 7 <sup>th</sup>	Submit any questions about the proposal to Alisha Heath at aheath@ermco.com
<b>February 13<sup>th</sup></b>	<b>Competition registration deadline for NECA Student Chapter Teams</b> (11:59 PM in each US time zone)
February 22 <sup>nd</sup>	Virtual Kick Off Project Meeting
<b>May 3<sup>rd</sup></b>	<b>Submission deadline for final PDF proposals</b> (11:59 PM in each US time zone)
June-July	Proposals reviewed by the ECIC jury.
July 31 <sup>st</sup>	Notification of review results and selection of finalist teams
<b>September 28<sup>th</sup></b>	<b>Oral presentations at NECA Convention and Award Ceremony</b> in San Diego, CA. Top three teams: 15 minutes each + 10-minute Q/A

## 2024 ELECTRI ECIC COMPETITION SCORING

The top three teams (based on written proposal scoring) will be invited to the NECA Convention in San Diego to give oral presentations on their ECIC proposals. The winner of the 2024 ELECTRI ECIC Competition will be the team with the highest **composite** written proposal and oral presentation score. The written proposal score and the oral presentation score will each represent 50% of each team's final score. Each finalist team's written proposal score will be published prior to the oral presentation segment of the competition.

### **Example:**

	Team A	Team B	Team C
Written Proposal Score:	48	47	44
Oral Presentation Score:	45	47	48
<b>Final ECIC Score:</b>	<b>93</b>	<b>94</b>	<b>92</b>

**Team B** would be the NECA/ELECTRI ECIC Competition winner.

## 2024 COMPETITION RULES

### Participation

- All communications should be directed to **Alisha Heath**, [ah Heath@ermco.com](mailto:ah Heath@ermco.com)
- Student participation is limited to undergraduate students. Students who have graduated within six months of the NECA Convention will be eligible to take part in the team's on-site presentation at the Convention.
- Student teams are expected to have four to six core team members and are encouraged to engage with fellow students in supporting roles. A maximum of six team members can present the proposal at the NECA Convention.
- Each university team may submit only one final proposal.
- All team members are expected to be NECA Student Chapter Members. Teams are encouraged to recruit students from other disciplines to join the chapter and the team.
- Faculty members are strongly encouraged to use the challenge problem as an assignment in an existing course.

### External Input

- The completed proposal work must be original and prepared by the team members.
- Teams are expected and encouraged to gain input and feedback on the proposal from NECA contractors and chapter representatives, vendors, material suppliers, and faculty members.
- No team member is permitted to have earned wages for participating in the competition or wages for working on the project selected by the team.
- Teams can engage other industry experts to gain additional insights and perspective from other project stakeholders including but not limited to attorneys, general contractors, subcontractors, etc.

### Client Interaction/Outreach

- Student teams are expected to conduct themselves in a professional manner in all aspects of the competition.
- Student teams are expected to plan all meetings with their local NECA chapters and contractors. All interactions should be conducted in a professional manner that is not disruptive to anyone's educational requirements.
- Teams are expected to represent accurately the goals and intent of the competition in any website and publication materials they use to develop sponsorship opportunities and in outreach messages about their participation in the competition.

- Should student teams have issues engaging with local NECA chapters or NECA contractors, ELECTRI encourages you to notify Anna Jochim [anna.jochim@electri.org](mailto:anna.jochim@electri.org)

## Travel Costs/Sponsorship/Expenses

- Teams are encouraged to seek financial sponsorship to support their team’s travel costs to the Convention and other costs associated with the development of the proposal.
- ELECTRI International will provide travel support of up to \$2000 to each finalist team.
- Awards for winning presentations will be made to the university department of the winning team.
- Prize money is to be used to support general NECA Student Chapter activities, at the discretion of the NECA Chapter Faculty Advisor.
- The Best Presenter winner will receive a financial award via a check made payable directly to the winning student.

## 2024 DETAILED SCORING

Contractor/Design Qualification Statement	Total Possible Points
<ul style="list-style-type: none"> <li>• <b>Written Executive Summary (10 POINTS), including mission statement (5 POINTS) and an explanation of the role each team member will perform (5 POINTS).</b></li> </ul>	20
<ul style="list-style-type: none"> <li>• <b>Team resumes – 1-page max for each core team member (1 POINT), uniformity (2 POINTS) and professional appearance (2 POINTS).</b></li> </ul>	5
<ul style="list-style-type: none"> <li>• <b>Summary of the overall project: What did team members learn throughout the challenge and how will this impact them in their future careers? What are some of the key takeaways and lessons learned from the experience? (30 POINTS)</b></li> </ul>	30
<b>Technical Analysis: Project Qualifications &amp; Special Considerations</b>	
<ul style="list-style-type: none"> <li>• <b>Work Assignment Log (WA) (20 POINTS)</b> Students will need to create a work assignment log. Some contractors may use a different name for this log, so when talking to other NECA contractors please note that they may refer to this log differently. A</li> </ul>	20

<p>work assignment log is used as a checklist for both the BIM engineer and the people in the field. For the BIM engineer, the log is used to keep track of all BIM related tasks that have been completed and those that still need to be completed. It can track items such as coordination start and finish dates. The team can include Work Assignment (WA) information on whether installation drawings, prefab sheets, Trimble Field points have been created and completed for that specific task. The log can also have information such as when the WA is due to the field and how much material and labor will be needed to complete the WA on site. Decide with your team and NECA partners the best way to organize your WA log to make the BIM portion of this project go as smoothly as possible.</p>	
<ul style="list-style-type: none"> <li>• <b>Prefabrication Plan (30 POINTS)</b> In this section, teams are asked to create a prefabrication plan. This can be a major part of your job as a BIM engineer, depending on how much the company you work for utilizes prefabrication. Teams are to look at the construction documents and come up with various elements in the electrical scope of work that could be sent to a prefabrication shop. You will need to describe why you think these elements would be good for prefabrication, how much money and time you think pre-fab would save the project, and how you plan to get the information to the prefabrication shop so that they can give you the product that you want.</li> </ul>	<p>30</p>
<ul style="list-style-type: none"> <li>• <b>Use Robotic Total Station to layout points (50 POINTS)</b> Work with your local NECA contractor/industry partner to do a side-by-side comparison to lay out a portion of the ECIC project. One team will use traditional methods of tape and string while the other team will leverage a robotic total station. Student teams will need to document the process and summarize key takeaways from the demonstration along with perceived pros and cons of each workflow.</li> </ul>	<p>50</p>
<ul style="list-style-type: none"> <li>• <b>Installation Drawing (25 POINTS)</b> Using the feeders and hangers that you model in the Revit portion of the project, teams are asked to create (3) installation drawings. For example, you have been asked to model feeders. The field has no way to know exactly how you ran the conduit through the building. This information does not just get out to the field because you model it. As a BIM engineer, you must provide the field with sheets detailing just how the feeders run through the building. The way you do this is by creating a very detailed drawing that provides the field with so</li> </ul>	<p>25</p>

<p>much information that they can install it exactly as it was modeled in Revit with little to no assistance from the person who modeled it in Revit.</p>	
<p><b>Application of Means and Methods: BIM Execution Plan, BIM Authoring, and Coordination</b></p>	
<ul style="list-style-type: none"> <li> <p><b>BIM Execution Plan (40 POINTS)</b>            In order to successfully implement BIM on a project, the project team should create a detailed BIM Project Execution Plan. The BIM Project Execution Plan defines uses for BIM on the project (e.g. design authoring, spatial data management, and design coordination), along with a detailed design of the process for executing BIM throughout the project lifecycle. Teams are asked to work side by side with their NECA partners to create their own BIM execution plan. You will approach this from the perspective of an electrical contractor. Some items that are typically seen in these plans are plan overview, project information/scope, project contacts and their roles and responsibilities, project goals and BIM uses, collaboration procedure, technological infrastructure needs, model structure, project deliverables, and more.</p> </li> </ul>	<p>40</p>
<ul style="list-style-type: none"> <li> <p><b>BIM Modeling and Coordination (60 Points)</b>            Using Revit model electrical systems throughout the building utilizing means and methods that an electrical contractor would use while executing the projects electrical scope of work while coordinating with other trades. Examples of this could be modeling conduits, cable tray, sleeves, hangers, etc. ELECTRI will provide students with a base Revit model that they can model in the various electrical systems (30 POINTS)</p> <p>Coordinate your model against other trades to ensure constructability and to avoid delays during the construction phase. Teams will need to identify clashes and determine the most cost-effective solutions to resolve issues (30 POINTS)</p> </li> </ul>	<p>60</p>
<p><b>Interaction with ELECTRI and NECA</b></p>	
<ul style="list-style-type: none"> <li> <p>Teams are required to have a minimum of 1 team member attend the following live educational courses to ask questions:  <u>Virtual BIM Training:</u> Teams are required to attend a minimum of 8 hours of online BIM training classes. ELECTRI will offer four 2-hour courses in addition to providing software for students to use for the</p> </li> </ul>	<p>75</p>



<p>challenge. Courses that will be offered include training on how to author and coordinate an electrical model. Attendance will be accepted for both live and on-demand viewing. Student teams can also work with their local NECA contractor/chapter to schedule additional training courses. (25 POINTS)</p> <p><u>Participate in an online webinars:</u> Team members are required to participate in monthly webinars hosted by ELECTRI. Live/Real-time participation is strongly encouraged, but recordings will be available if you are unable to attend live. (25 POINTS)</p> <p><u>XR10 Training:</u> Learn how to use a Trimble XR-10 and leverage mixed reality 3D models to enhance workflows. The Student Team with the most innovative use of leveraging the XR-10 will be awarded \$1,000. (25 Points)</p>	
<ul style="list-style-type: none"> <li>• Each team is required to partner and interact with one or more NECA contracting members in the development and refinement of their Electrical Contractors’ Innovation Challenge proposal. Provide a summary of the interaction the team completed with its sponsoring NECA chapter and local NECA contractors. (This may include online meetings, phone calls, tours of facilities and project sites, etc.) (40 POINTS) <ul style="list-style-type: none"> <li>○ Maintain a log of the team’s communication and interactions with the NECA contractors/chapter regarding the ECIC project and include it in the proposal’s appendix (10 POINTS).</li> </ul> </li> </ul>	50
<ul style="list-style-type: none"> <li>• Teams are encouraged to include underclassmen (Freshmen, Sophomores, &amp; Juniors) in the development of the team’s final proposal. We encourage these underclassmen to own specific areas of focus tied to the overall challenge and for their efforts to be clearly documented. Potential areas of focus for underclassmen would be creation of BIM, participating in online training courses, interactions with local contractors, etc. For each (Maximum of 3) underclassmen assisting in developing content for the final proposal, up to 25 points will be awarded to the team. Scoring will be based on documentation of the underclassmen’s overall participation in the challenge. Teams may receive less than the 25-point maximum based on students’ overall impact on the proposal (Maximum 75 Points).</li> </ul>	75
<p><b>Campus/Local Media Engagement</b></p>	
<ul style="list-style-type: none"> <li>• <u>Teams are encouraged to publicize participation in the Electrical Contracting Innovation Challenge in university/department</u></li> </ul>	Max – 40

<p><u>newsletters, websites, social media, and local media.</u> The submitted proposal should include at least one drafted or published article describing the team’s participation in the competition and summarizing the project. For each media outlet, be sure to use the hashtag #ELECTRI-ECIC and tag ELECTRI International and NECA (@ELECTRI_org and @necanet on the social platform). Also, identify the NECA contractor who is supporting the team during the competition. Teams will be scored on their overall media campaign. Include links to all additional published articles in the proposal’s appendix.</p>	
<p><b>Format/Appearance</b></p>	
<ul style="list-style-type: none"> <li>• Each team is expected to submit a final proposal as though it would be presented to the customer for consideration. The proposal should be in PDF format and include a Table of Contents detailing each of the sections in the order they are listed on this scoring checklist.</li> <li>• Five (5) points will be deducted each time content is not placed in the requested order. Omitting the Table of Contents will result in a score of zero (0) out of 25 points for the Format/Appearance section.</li> <li>• Proposals are expected to be of professional quality—with no spelling or grammatical errors, cohesive formatting throughout, and written in a uniform voice and style. Proposals should be a maximum of 40 pages and submitted in color. (15 POINTS)</li> <li>• An appendix may be added to provide additional material. The appendix may <u>only</u> include contractor engagement logs, media articles, product data sheets/cut sheets, and estimate backup documentation. There is no page limit on the appendix, but <u>each item</u> in the appendix <u>must</u> be cited in the proposal using the format: (See Appendix, page XXX). (10 POINTS)</li> </ul>	<p>25</p>
<p><b>TOTAL POSSIBLE POINTS</b></p>	<p><b>545</b></p>

**Oral Presentation**

ELECTRI International will provide the Rules and Regulations for the Oral Presentation to the three finalist teams selected by the competition jury.

## Awards

Three finalist teams will receive a financial award for their respective university program, a plaque, and \$2,000 in travel support from ELECTRI International to attend the NECA Convention in San Diego. The award for the Best Presenter goes directly to the student winning this category. The awards for most detailed BIM, most innovative use of technology and best media campaign are open to every team that submits a final proposal.

### Team Presentation

1 <sup>st</sup> place	\$4,000
2 <sup>nd</sup> place	\$3,000
3 <sup>rd</sup> place	\$2,000

Best Presenter - \$500 (Awarded to Individual)

Most Detailed BIM (Building Information Model) - \$500 (Awarded to Student Team)

Most Innovative Use of Trimble XR-10 - \$1,000 (Awarded to Student Team)

Best Media Campaign - \$500 (Awarded to Student Team)

## Travel Support and Complimentary Registration for the NECA Convention

All members of each finalist team and the team faculty advisor will receive complimentary registrations to the NECA Convention.