

## Engineering Innovation Award Finalists

This award recognizes individuals or workgroups who have developed innovative processes or programs.

Judging Criteria	Potential Entries Might Include:
<ul style="list-style-type: none"> <li>● Adaptability - Can it be adopted by other companies regardless of size? Geographic location? Public or Private?</li> <li>● Impact - Does it provide the opportunity for new revenue or customer growth? Reduced cost of operation? Greater efficiency/productivity? More safety? Lower rates?</li> <li>● Creativity - Is this a new concept or the adaption of an existing concept?</li> <li>● What was the purpose of implementation from conception to completion?</li> <li>● Presentation - How did the presenter communicate the concept within the time allotted?</li> </ul>	<ul style="list-style-type: none"> <li>● Innovation in an engineering or design process or procedure that results in improved time or cost efficiencies during construction or maintenance activities.</li> <li>● Innovation in a construction process or standard that allows an operator to serve a new customer or group of customers.</li> <li>● Innovative partnerships with your sales and marketing counterparts that result in increased customer growth or the retention of existing customers.</li> <li>● Innovative partnerships with your human resources department that result in an enhanced ability to recruit and retain engineering talent for your organization.</li> </ul>

### Submissions Overview

Engineering Innovation Award Finalists		
Company Name	Program Name	ID Number
TC Energy	Reducing Capital Costs through Automated Program Planning	EI-1
TC Energy	GeoForce - Geospatial Threat Management Toolset	EI-2
Southern Company Gas	KMI- Keep Me Informed	EI-4

Nomination EI-1	
<b>SGA Member Company Name</b>	TC Energy
<b>Program Name</b>	<i>Reducing Capital Costs through Automated Program Planning</i>
<b>Program Description</b>	<p>Automated Program Planning is focused on making it simpler to optimize execution of pipeline integrity projects based on past and planned projects. Data silos have prevented project planners from getting a unified overview of planned work, which makes it difficult to coordinate repair and optimize projects across the different teams.</p> <ol style="list-style-type: none"> <li>1. The solution first creates a digital segmentation of the centerline and overlays all integrity projects for the next 20 plan years.</li> <li>2. Using geospatial processing, each project is linked to any other project within 500 meters (about 1640.42 ft).</li> <li>3. Then, it analyzes the project stream for daily changes, and uses those to surface insights to planners where there is potential for cost savings.</li> <li>4. Planners rate each relationship proposed, so the system can learn and improve the insights it provides over time.</li> </ol>
<b>Results of/Response to the Program</b>	Our value realization office estimates that by highlighting opportunities to bundle projects from different teams in the same geographic areas, TC can conservatively save \$1.6 million annually. TC Energy is seeking more than just a financial return for its efforts with this project. Our number one value is safety. By improving information access and flow, the company expects to focus more project scope each year which will improve system reliability and integrity.
<b>Contribution to “Connecting People, Ideas &amp; Information”</b>	Now we are finding opportunities we would have missed before, saving money so we can do more to enhance the overall safety and reliability of our pipelines. The tool surfaces information to planners to better collaborate across teams to find new insights and opportunities.
<b>Supporting Documents</b>	<a href="#">Click to view.</a>
<b>SGA Membership Category</b>	Transmission

Nomination EI-2	
<b>SGA Member Company Name</b>	TC Energy
<b>Program Name</b>	<i>GeoForce - Geospatial Threat Management Toolset</i>
<b>Program Description</b>	<p>TC Energy owns and operates over 32,000 miles of natural gas pipelines within 38 states in the United States, a sizable portion of which crosses through terrain highly susceptible to geologic hazards. To better support geohazard risk management, TC Energy has implemented a customized web-based geohazard platform (GeoForce) to identify, inventory, and track geohazards across their U.S. pipeline system. The platform was built within the Environmental Systems Research Institute (ESRI) ArcGIS Enterprise environment and leverages a diverse amount of ESRI product offerings. The platform is hosted on ArcGIS Portal and includes multiple custom apps and dashboards which allow users to efficiently view, summarize, add, and update geohazard data. Another key component of the system is a connection to ArcGIS GeoEvent Server. GeoEvent Server allows for the delivery of near real-time geohazard threat notifications through emails and dashboards (i.e., seismic events, flooding, precipitation). The notifications also provide detailed information for the sections of the system affected by the event, and in the case of a seismic event, a suggested course of action in alignment with TC Energy procedures. ArcGIS Image Server was leveraged to host over 5 terabytes of LiDAR imagery which can be used in concert with the other geohazard datasets present in the database. Custom geospatial scripts were also developed to create a near real-time link between the GeoForce master database and TC Energy’s master data mart, asset information, regulatory, and other organizational data. These scripts flag and report where spatial and/or attribute data have changed or may no longer be valid and therefore require follow-up action to support risk management (e.g., when pipelines are abandoned, HCAs are updated, or pipe properties are updated). The scripts also store the centerline attribute changes in a table for further review to identify potential trends. The GeoForce database is also built as a launching platform for proactive analytics, and eventually predictive analytics for critical precipitation thresholds for landslide risk management, landslide susceptibility mapping, system-wide risk scoring, seismic events and ILI bending strain coincident with geohazards. Details related to the threat alerts that are issued by the geospatial system are stored and visualized in a PowerBI integration. With the incorporation of ArcGIS Notebook Server, algorithms will be developed that will review the historical threat repository that is being generated and</p>

	<p>issue threat alerts based on probability of a hazardous event occurring in proximity of the pipeline system.</p>
<p><b>Results of/Response to the Program</b></p>	<p>The GeoForce program has been very successful in better supporting geohazard threat management for TC Energy by centralizing data into a single geospatial platform that is used daily by members of the Weather and Outside Forces (WOF) geohazard threat management team. Geohazards actively managed under TC Energy’s WOF program include landslides, subsidence threats (e.g., karst and underground mining), seismic threats (ground shaking, liquefaction, and fault rupture), pipeline exposures, and water crossings. Spatial and attribute data for all actively managed threats are stored in the GeoForce database. GeoForce was developed to quickly bring up site-specific information, cross-reference adjacent threats, and leverage other internal TC datasets (e.g., pipe properties, LiDAR, ILI data, Class and HCA locations, etc.) to support efficient risk assessment and overall threat management. Each individual threat may contain a large amount of information that needs to be entered, standardized, queried, and tracked over the lifespan of the pipeline system. The data management needs can be overwhelming if an operator has thousands of threat sites to manage over time. To better assist with data management all threat locations in the GeoForce database have the framework to include assessment history, instrumentation, monitoring, and mitigation history, as well as supplemental links that direct users to field reports, photos, and project-specific information. In the web-based platform the WOF team can rapidly view, query, and inventory new geohazard threat data and readily cross reference spatial threat data with other TC Energy datasets.</p>
<p><b>Contribution to “Connecting People, Ideas &amp; Information”</b></p>	<p>The GeoForce platform has increased connectivity between many stakeholders wanting to better understand geohazards on TC Energy’s US gas pipeline system. Prior to the development of the GeoForce platform, threat data were stored in multiple excel tables and individual KML datasets that were viewed in Google Earth. Similarly, separate databases for other TC Energy organizational data resulted in a disconnect from geohazard threat data, including the ILI/IMU database, project tracking in TC Energy’s Master Plan database, current boundaries depicting operational areas and relevant stakeholders, and current pipeline centerline attributes. The GeoForce platform has developed connectivity between all these datasets, allowing for better collaboration and data sharing between the WOF team and internal and external stakeholders. Also, near real-time geohazard threat notifications through GeoEvent Server rapidly connect members of the WOF team to geohazard conditions that may be concerning for TC Energy gas pipelines. For example, USGS near real-time alerts for seismic events are provided via email and include a link to the event location in the GeoForce</p>

	<p>seismic dashboard where potentially affected pipelines and threat locations are summarized. Users are also linked via email to the USGS seismic event website where additional data can be reviewed. The seismic alerts also provide a suggested course of action in alignment with TC Energy procedures depending on earthquake magnitude and distance from the epicenter. Another key component of GeoForce that better connects personnel with information is the orphan data script, which flags spatial and attribute changes to geohazard locations and TC Energy Geographic Information Systems (GIS) centerlines. A persistent challenge to pipeline operators that work with GIS centerline data is that centerline attributes and locations are often updated. Similarly, threat data are dynamic, and threat locations and attributes are modified as field assessments are conducted and as conditions change. A disconnect between current centerline and threat data can result in an “orphan data” situation when the latest and greatest locations and attributes are not synced, resulting in an incomplete picture of the conditions present. As such, TC Energy built a comprehensive orphan data tool in GeoForce which updates threats with the current attributes and spatial information of the centerline. The orphan data tool also monitors changes to the GIS centerline and updates threat symbology in a dashboard webmap when relevant changes occur. This tracking system was built with python code and packaged into a GIS toolbox which can be run on demand, or on a scheduled basis. By keeping current pipeline attributes tied to individual threats and flagging changes, better informed risk assessments can be completed.</p>
<p><b>Supporting Documents</b></p>	<p><a href="#">Click to view.</a></p>
<p><b>SGA Membership Category</b></p>	<p>Transmission</p>

Nomination EI-4	
<b>SGA Member Company Name</b>	<b>Southern Company Gas</b>
<b>Program Name</b>	<i>KMI- Keep Me Informed</i>
<b>Program Description</b>	<p>Southern Company Gas is proud to submit its Keep Me Informed (KMI) initiative and pilot program for an award at the Southern Gas Association. The KMI initiative was engineered to enhance the customer experience and address the pain points that customers face when scheduling field visits with one of Southern Company Gas companies. Customers voiced their frustration on the lack of visibility into the process and felt trapped at home with appointment windows between four and eight hours long, resulting in missed appointments and additional costs for the company.</p> <p>Southern Company Gas utilized the AGILE project methodology to continually deploy proactive notifications to customers about their appointment status, improving visibility into the process and providing a modernized communication experience for residential customers. The KMI initiative started with a minimal viable product with basic text messaging on a single order type in August of 2019 before expanding in both scope and functionality with the following enhancements:</p> <ul style="list-style-type: none"> <li>• Expanded to include most residential order types where a customer appointment is needed.</li> <li>• Expanded to include all states Southern Company operates in.</li> <li>• Text message was enhanced to include technician name and photo.</li> <li>• Technician's location on a map and estimated arrival time.</li> <li>• A post-visit satisfaction survey was also added to capture feedback from customers and improve future interactions.</li> <li>• Additional text messages and safety messaging included with COVID protocol during the pandemic.</li> </ul> <p>The KMI initiative also introduced a concierge-style service to proactively advocate for the customer by notifying them via phone when an appointment is disrupted by an emergency or another issue. The implementation transformed the residential customer experience and increased engagement while reinforcing core corporate values to deliver, enrich and invest in a customer-centric culture.</p> <p>In addition to the KMI initiative, Southern Company Gas has also implemented a pilot program to address customers' scheduling frustrations further. The pilot program includes 2-hour appointment windows with morning and evening appointments,</p>

	<p>as opposed to the traditional 4 and 8-hour appointment windows. The company is also increasing its evening and Saturday appointments to provide greater flexibility and control over schedules for customers.</p> <p>Southern Company Gas is committed to delivering a superior customer experience through innovative solutions and pilot programs that set new standards for excellence in customer engagement and service. The KMI initiative and pilot program is transforming the residential customer experience, generating positive feedback, and reinforcing Southern Company Gas's position as an industry leader in customer-centric service.</p>
<p><b>Results of/Response to the Program</b></p>	<p>The results of this program have been outstanding, with customer satisfaction levels at an impressive 9.68/10 rating for customers who opt in for text messaging about their appointment. The number of missed appointments has decreased by 35%, saving both time and money while enhancing the overall customer experience. To date, over 677,000 customers have opted in for KMI, resulting in over 3 million text messages being sent. The program has also allowed our concierge representatives to proactively engage with and advocate for customers, resulting in over 30,000 proactive engagements. Furthermore, we have a 10.23% increase in Saturday bookings and a 29.96% increase in 4pm-8pm bookings from Dec YTD 2019 to Dec YTD 2022. Additionally, our shorter 2-hour appointments now make up 6% of total appointments, with an attainment rate of almost 97% made within the 2-hour window. We are expanding the 2-hr appointment windows to all of our service centers by end of Q1 2023.</p>
<p><b>Contribution to “Connecting People, Ideas &amp; Information”</b></p>	<p>The Keep Me Informed (KMI) initiative has made a significant contribution to connecting people, ideas, and information in the communities we serve. By utilizing agile project methodology and modernizing communication channels, we have been able to provide a seamless and proactive customer experience that prioritizes the needs of our customers. Through this initiative, we have strengthened our relationships with our customers, improving their satisfaction with our services, and enhancing their overall experience.</p> <p>In addition to improving our interactions with customers, the KMI initiative has also contributed to building stronger communities by reducing missed appointments, saving time and resources, and enhancing our ability to respond to emergencies and other issues. By improving communication and providing more flexible appointment options, we have been able to meet the needs of a wider range of customers, including those with busy schedules or other constraints that make it difficult to take time off during the day. This has helped us to build more resilient and responsive communities that are better able to handle unexpected</p>



	<p>challenges and changes. Overall, the KMI initiative has played a critical role in connecting people, ideas, and information within the communities we serve. Through this initiative, we have built stronger relationships with our customers, enhanced our ability to respond to their needs, and contributed to building more resilient and connected communities. We remain committed to improving our services and providing the best possible customer experience, and the KMI initiative is just one example of how we are working to achieve these goals.</p>
<p><b>Supporting Documents</b></p>	<p><a href="#">Click to view.</a></p>
<p><b>SGA Membership Category</b></p>	<p>Distribution</p>