U.S. DEPARTMENT of ENERGY | Office of Energy Efficiency and Renewable Energy

Geothermal Technologies Office

GTO Awardee Communications How-Tos

Being thoughtful about how you plan to communicate your research from the beginning of your award can help you have maximum impact with your initial announcement and as you have news to share along the way.

Creating a communications plan sets you up for success because it enables you to think proactively about how and to whom you want to communicate about your work and to develop concrete activities and goals to accomplish this.

In this quick start guide, we've included the materials you'll need to create a communications plan and execute it effectively, including real examples of results from a successful communications plan.

Contents

Questions? Concerns? Ideas? Feel free to contact us:

Geothermal Technologies Office (GTO) External Affairs Team: DOE.Geothermal@ee.doe.gov

Worksheet: Develop Your Communications Plan

Answer the questions on this worksheet to gather the information you will need to put together a communications plan, then use it fill in the outline provided next.

1. Choose your target audience

What audience do you want to reach? Who will be most interested or benefit most by hearing about your work?

2. What are your communications goals?

What do you hope to accomplish in communicating about your work?

3. Who is your audience?

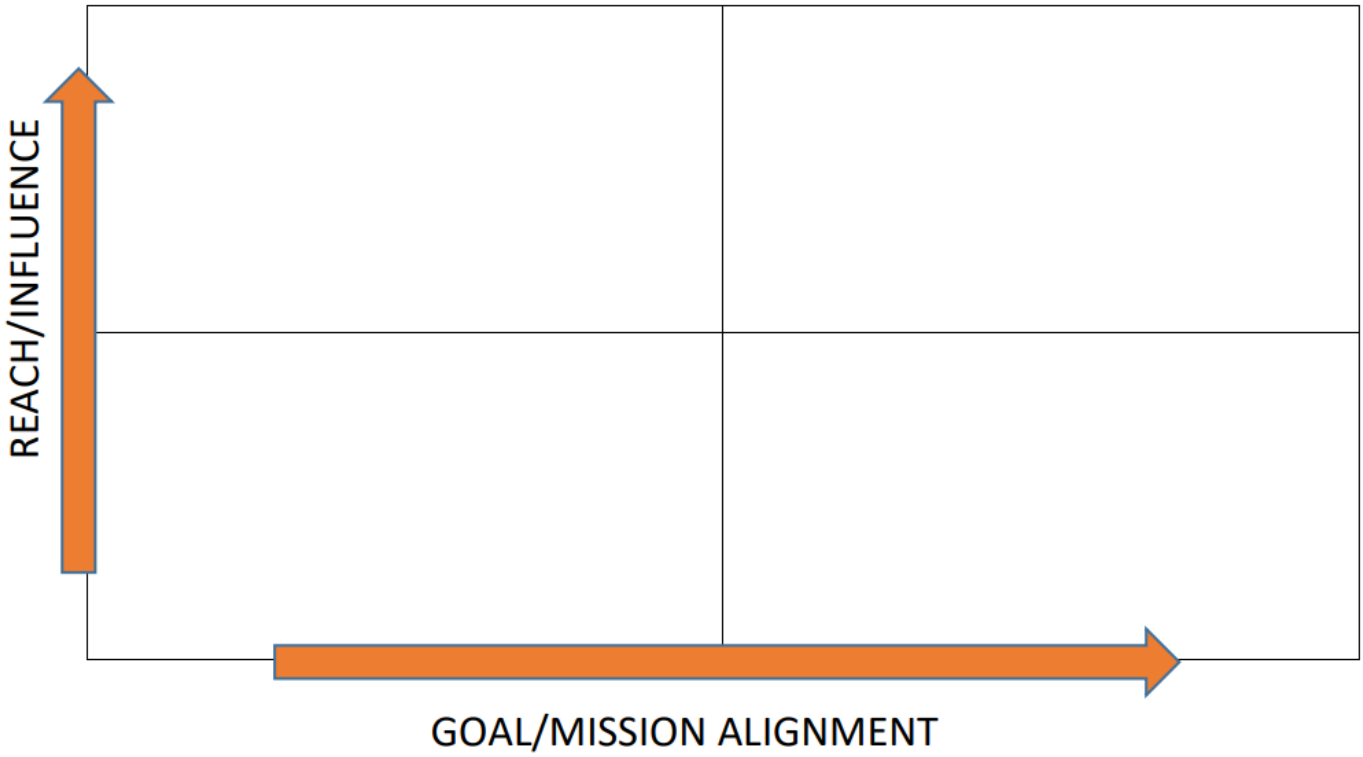
Brainstorm 5-10 groups or organizations that would be interested in news about your work.

4. Map your audience

Which audience members are most important? Stakeholders in your audience(s) have varying levels of influence, and some are a better fit for your goals. Use the map on the next page to help you figure out the most promising audiences to target.

Audience Map

The best audience stakeholders to target will be in the top right-hand corner – that is, both high in their ability to influence others AND high on alignment with your goals. List your top targets.



5. Key Messages

Develop 1–3 key messages that you want to have your audience and media repeat. These messages should be factual, concise, and essential to your program or project.

For example: Geothermal resources can be used in multiple ways, including to produce electricity, heat and cool comes and businesses, and provide energy storage.

6. Anecdotes and/or Quotes

Think of 1-2 anecdotes and/or quotes that help illustrate your messages.

For example: Hugo Zazueta, a graduate student in the second cohort of the Geothermal INTERN opportunity, was impressed by the expertise at Oak Ridge National Laboratory, "My advice for anyone interested in working geothermal energy is to apply for internships at national laboratories like ORNL [Oak Ridge National Laboratory]. These labs are home to some of the greatest minds in the field. Researchers at these prestigious institutions possess deep knowledge and wisdom [...], providing invaluable learning opportunities."

7. Tactics

Brainstorm some creative ways to get your message out. These should be relevant to your audience(s), realistic for you to produce, and replicable. The best content can be used in multiple ways, for example: a blog post can be repurposed as an authored article on another website, then turned into an email to stakeholders or even a LinkedIn post.

8. Measurement

Measuring and documenting the results of your work as you go along will be key to communicating them. Brainstorm what metrics in your work would be most meaningful to your colleagues and/or most informative to your future efforts, and then brainstorm what resources you can use to help measure your success in those metrics.

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Communications Plan Outline

Overview

Provide a high-level description of the potential outcomes of the communications plan, answering questions such as:

- How does the work being announced advance the goals of the organization?
- What broader messaging goals can be achieved by this announcement?
- What key assets will be updated or added to the organization's communications arsenal?

Internal Communications

Describe how you will engage your colleagues in the announcement process. Who needs to know what, when? What approvals are necessary before you proceed to the next stage? How will your internal audience be able to share the news once it is released?

Stakeholder/Audience Engagement

Describe how you will engage your key audiences in the news and when. Prioritize your stakeholders based on their influence and potential impact to help maximize your reach. Ensure that you make it as easy as possible for others to share your message. For example, give external stakeholders a heads up on your big news and prepare a communications package with prepared social media posts, newsletter blurbs, and website information for them to use.

Media Relations

Develop Talking Points

Describe the topline messages that you want to see in media coverage. In five bullets, these messages should cover what you do and what this project means for your future. In addition, develop 3-5 examples or anecdotes that speak to the topline messages.

Media Outreach

Develop a list of reporters that you want to pitch and what your story ideas are. You should include a few "reach" publications that would cover your story in depth. Describe when you will send your press release and who, if any, will get an embargoed copy of your release (i.e., an "early" release that they agree not to share before your formal release). See next section for further detail about media relations.

Op-Ed

If you have recognized high-level or particularly influential stakeholders through your audience identification, it is often a good idea to ask a third party to write a guest op-ed in support of your achievements. Brainstorm a few "reach" opportunities who might be interested in publishing an op-ed about your news and what publications you would like it to get placed in.

Visual Assets

Graphic design is increasingly important to communicating your messages. Potential graphics include:

- Maps
- Photos with text overlay
- Social media-sized images
- Charts and graphs
- Video

Web

The primary channel through which your audience will access your news is your website or your organization's website. This provides an opportunity to communicate the purpose and scope of your news in a concise and impactful way. Ensure that your website has links to a summary, key findings, graphics and any additional assets like blog posts, video, and news stories.

Social Media

Describe how you will engage social media on your news, including what platforms will be used. You should also plan to share your social media posts with key stakeholders (including GTO) so that they can amplify your news on the day it is released. Be sure to identify the hashtags you will use.

Materials

List all of the materials you will develop for the announcement with deadlines and owners. Many of these benefit from being gathered on an ongoing basis as you are conducting your work. This could include taking photos to share later or collecting data for graphics you plan to create.

Measuring Success

Describe what metrics you will use to determine whether or not you have achieved your communications goals. Examples include: social media impressions, traffic to your website, media hits, email list subscriptions, etc.

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Media Engagement Tips and Tricks

How to Develop a Media List

The first step is to take a look at stories in the media about geothermal and who's writing about your specific field or area of study. Awardees usually target the journalists that they regularly read or where they want to be featured.

One helpful tool is Google News. Try searching for companies similar to you, other researchers, or your topic area to see what media coverage they're getting as well as the key words that you feel are relevant. Also, X (formerly Twitter) is a great resource for learning about different geothermal and renewable energy research communities. Even if you don't feel like tweeting or want to make a private account, you can at least follow the journalists you like or want to get to know better.

GTO can't give out specific journalist names, but we can help guide you towards outlets that might be relevant. First, we recommend reaching out to local media to discuss the value of your work and the local impact. In addition, there are several outlets that regularly write about geothermal. Be sure to also consider publications that write about renewable energy, energy, and other relevant topics (e.g., building efficiency). Don't limit your search to print publications; outlets like podcasts also present good media opportunities. Also consider national-level media that cover geothermal or renewable energy often as well as any media local to your headquarters or projects.

<u>Geothermal Trades/General Renewable Energy/Energy/Other Relevant Topics</u>

- Air Conditioning, Heating, and Refrigeration News
- Renewable Energy World
- Bloomberg
- Bloomberg New Energy Finance
- Clean Energy Wire
- Canary Media
- Energy Cast (podcast)
- Energy Post
- Gulf Oil & Gas
- PBS Energyswitch (podcast)
- Tech Xplore
- ThinkGeoEnergy

Tips for Writing a Press Release

There's no one way to write a press release, but all releases should generally be succinct and offer only the most important information. Think of it like the highlight reel. Journalists don't have a lot of time to review each release in depth, so it's important to put the most important information at the top and then move into explaining your achievement and why it's important. Writing a good press release takes practice, but once you get the hang of it, it's a skill you can use over and over again.

How to Find Contact Information

Once you find articles that cover similar stories or journalists that you like, you will need to find their contact information and add them to your list.

If you can't find a journalist's contact information from the outlet website, their bio page, or underneath an article they've written, try LinkedIn or using the domain name (e.g., @bloomberg.com) to find email addresses. Once you figure out the domain name for all email addresses used at an outlet, type (in quotation marks) the domain name, plus sign, and then that person's name in quotes. This will pull up all mentions including both the domain name and that person's name – often giving you an email address.

Pitching Your News

Once you have your media list prepared and your press release written, it's time to send!

In the body of your email, write a short personal email that explains the news in no more than three sentences. It's important that this pitch is brief, personable, and sells the overall importance or significance of your work. After the pitch, paste the entire copy of your press release. To maximize the possibility the recipient will read your release, do not attach it; clicking attachments takes time and is less secure, so many reporters won't do it.

Successful Example of Communicating Results

By creating and executing a communications plan, you can maximize the impact of your work. Below is an example of successful communication of results from a GTO-funded project by Zayo.

Examples from Zayo's campaign include their press release, the related Department of Energy X post (see screenshot below), Zayo's blog, and two news articles from Fierce Network and Telecompetitor about the project.

Press Release: Zayo Partners with U.S. National Laboratories and Rice University to Deliver Groundbreaking Research that Uncovers New Sustainable Energy Sources

The Imperial Valley Dark Fiber Project used Zayo's dark fiber infrastructure to map undiscovered geothermal resources critical for clean energy production

BOULDER, Colo. – Zayo Group Holdings, Inc., a global communications infrastructure provider, announced the completion of the Imperial Valley Dark Fiber Project-a collaborative research effort between Lawrence Berkeley National Laboratory and Rice University and funded by the U.S. Department of Energy to explore the efficacy of leveraging telecommunications fiber to map and monitor geothermal resources that could enable a low carbon energy future.

The Challenge

Berkeley Lab and DOE have been exploring geothermal energy as a renewable alternative to fossil fuels for decades. Clean energy sources like geothermal energy are necessary for producing sustainable energy, reducing emissions, and addressing climate change. However, these resources are often hidden – meaning there is no resource surface expression – and mapping these geothermal resources was historically labor intensive and often cost prohibitive.

The Imperial Valley Dark Fiber Project, which kicked off in 2019, sought to develop strategies to better find these resources through seismic sensing via existing telecom dark fiber.

Why Dark Fiber

The Berkeley Lab-Rice team, in collaboration with scientists from Lawrence Livermore National Laboratory and Scripps Institution of Oceanography, used Zayo's dark fiber network in the Imperial Valley of California—an area already known to be home to many hidden geothermal resources—to test various techniques for mapping geothermal resources. These methods include Distributed Acoustic Sensing (DAS), a technique that turns Zayo's dark fiber into an array of seismic measurement locations to build a picture of what is underground.

In a conventional seismic experiment, only a few seismic sensors can be deployed in one small, targeted area. This often requires significant time for sensor deployment and permitting, while resulting in the use of just a few dozen sensors. Using existing dark fiber, however, significantly reduces deployment time and increases the number of sensors to thousands. With dark fiber, researchers have access to tens of kilometers of fiber and can measure every few meters, offering unprecedented access that was previously cost prohibitive.

“Our future as a nation relies on uncovering new ways to fuel our society, and while solar or wind energy alternatives often take the spotlight, the value of geothermal energy production is becoming more apparent,” said Dr. Jonathan Ajo-Franklin of Rice University, one of the researchers on the project. “But geothermal research takes an incredible amount of collaboration. Zayo’s fiber infrastructure and expertise were a significant benefit to our team’s research. This isn’t a typical telecom project; it requires equipment with capabilities that other projects do not have, and technical guidance to support our team in making decisions relevant to deploying the fiber.”

The Findings

By fusing dark fiber with traditional seismic sensors, the Berkeley Lab-Rice team has built larger, more detailed maps of the subsurface. Researchers have also leveraged Zayo’s dark fiber to test additional applications, including earthquake detection. Findings from the project have been published in numerous scholarly articles.

“Network infrastructure is at the heart of innovation, and that couldn’t be more true than it is with this project,” said Steve Smith, CEO of Zayo. “We are proud to have played a role in advancing the discovery and development of clean energy sources, in keeping with our longstanding commitment to drive a sustainable future. We hope the great work of the Berkeley Lab and Rice University team will inspire new conversations about how fiber infrastructure can be leveraged in new ways to make a positive impact on our future – some that we can only imagine today.”

To learn more about Zayo’s collaboration on the Imperial Valley Dark Fiber project, visit https://www.zayo.com/resources.

About Zayo

For more than 15 years, Zayo has empowered some of the world’s largest and most innovative companies to connect what’s next for their business. Zayo’s future-ready network spans over 17 million fiber miles and 142,000 route miles. Zayo’s tailored connectivity and edge solutions enable carriers, cloud providers, data centers, schools, and enterprises to deliver exceptional experiences, from core to cloud to edge. Discover how Zayo connects what’s next at www.zayo.com and follow us on LinkedIn and Twitter.

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Social Media Post

Blog Post: Geophysicists Used Zayo Fiber for Geothermal Research

As one of the Department of Energy's (DOE) national laboratories, Lawrence Berkeley National Lab is tasked with solving some of the country's most challenging energy-related challenges. One of the greatest geoscience challenges facing society is how to move away from fossil fuels for energy to reduce the nation's carbon footprint.

With this aim in mind, a team of geophysicists led by Véronica Rodriguez Tribaldos of Berkeley Lab and Jonathan Ajo-Franklin of Rice University set out to find a clean alternative energy source in the form of geothermal energy – natural reservoirs of hot water deep in the earth. Some geothermal resources can be easy to spot from the surface – hot springs and geysers in places like Yellowstone National Park are key indicators of the wealth of geothermal energy lying beneath the surface.

Often, however, valuable geothermal resources are not so obvious. The United States Geological Survey (USGS) estimates that there are several gigawatts of hidden geothermal resources waiting to be tapped and turned into energy.

The Hunt for Hidden Geothermal Treasures

The challenge, then, becomes finding these hidden geothermal resources and mapping them out. Only then can scientists begin to unlock their potential.

For this research project, the Rice-Berkeley Lab team, in collaboration with other scientists from Lawrence Livermore National Lab and Scripps Institution of Oceanography, focused their attention on

the Imperial Valley in California, at a site just south of the Salton Sea and close to the U.S.-Mexico border. First targeted by oil and gas companies who found hot water instead of the fossil fuels they were seeking, this region is now renowned for its vast pool of geothermal resources.

Unlike the Salton Sea field that features geysers, bubbling mud pits, and mud volcanoes – sure signs of geothermal activity underground – the Brawley Geothermal Field where Berkeley Lab focused its attention lacked surface expression. Geophysicists knew that there were geothermal resources underground in the Brawley field – thanks to previous exploration by oil and gas companies – and wanted to investigate the seismic signature of this previously hidden system. With the knowledge gained from the Brawley field research, the team could then apply the same techniques to find hidden geothermal resources.

Revolutionizing Seismic Data Collection with Dark Fiber and DAS

To investigate the field, researchers had a few options: First, they could deploy traditional seismic sensors every few meters in the area – something that takes extensive time, labor, and money. Doing this type of project involves permits with long approval wait times, large teams and budgets, and lots of manual labor.

These factors made option two more attractive to the team. Instead of deploying sensors individually, they could tap into a local resource already in the ground but being used for something else – dark fiber. This is the part of the story where Zayo comes in.

Aside from its initially intended purposes, unlit telecom fiber can be turned into thousands of seismic sensors using a technique called Distributed Acoustic Sensing (DAS). These sensors measure ambient noise or earthquake waves bouncing around the earth as a function of time, giving scientists a better picture of what lies underneath.

Because this asset is already in the ground, all scientists must do to tap into it is go to the point of presence (PoP) and install an interrogator – a device that listens to signals sent through fiber optic cables, enabling scientists to detect seismic activity. This significantly reduces the project's cost and the time that would otherwise be required to get the proper permits to place sensors and then do the work to place them.

In just two days, the team was able to use DAS to highlight where the geothermal resource was by detecting specific seismic signatures indicative of geothermal activity. This is a conclusion that may have taken months to reach without DAS. Zayo happened to have dark fiber at the right place and time for the team to better understand previously hidden geothermal resources in the Imperial Valley.

Ajo-Franklin of Rice said that the time savings made possible by using pre-existing fiber infrastructure significantly benefitted the team's research. Ajo-Franklin also noted the importance of Zayo's expertise in the project, "This isn't a typical telecom project; it requires equipment with capabilities that other projects do not have, and technical guidance to support our team in making decisions relevant to deploying the fiber."

Because of this research, scientists now have an efficient way of finding previously unknown, untapped geothermal resources that could help lower fossil fuel emissions by providing a low-carbon, reliable, alternative source of energy. This alternative improves local air quality and enhances energy security while aiding in reaching carbon offset goals. Geothermal energy is emerging as a vital component of the movement to cleaner and more sustainable energy systems.

The Many Applications of DAS – Now and in the Future

Leveraging dark fiber and DAS to find hidden geothermal resources is just the tip of the iceberg – this type of research can have many applications. DAS is revolutionizing the world of seismic sensing and providing opportunities for cleaner energy, better natural disaster detection, and smarter cities.

Using DAS data, scientists can create 3D maps of Earth's subsurface, enabling a variety of applications. These applications include geothermal exploration, monitoring changes in rock formations due to CO2 injection, and studying the water cycle by monitoring aquifers and their responses to stress.

This technique also allows for high-resolution earthquake monitoring, giving scientists a better understanding of faults and their behavior and detecting earthquake early warning signs, possibly giving cities a few-second head start to shut down critical infrastructure and improve safety before an earthquake strikes.

Aside from applications on terrestrial fibers, DAS on marine fibers can open up brand-new opportunities. This technique applied to subsea cables can help scientists study mammals like whales, monitor mudslides, and understand water column dynamics.

What's more, DAS isn't just useful to scientists – it can help telecom operators, too. By monitoring vibrations along fiber optic cables, telecom providers can detect tampering or damage.

The future for DAS looks bright. DAS technology has the potential to generate rich datasets that could be valuable for a number of different uses. Urban planners, geophysicists, and transportation operators could use these datasets for a wide range of applications. For example, data could be used for smart city applications, enabling urban planners to gather insight on metrics like traffic volumes on highways.

Ultimately, the goal is to not only use this data but also process it in near real-time, allowing for quicker response to events. Getting information as close to real-time as possible can enhance earthquake detection and early warning systems, reducing response times even further.

Overall, the use of dark fiber and DAS technology has far-reaching implications for humanity. This research enables cleaner energy through geothermal exploration, bolsters natural disaster detection, and contributes to smarter cities by enabling the creation of 3D subsurface maps. This technology holds the potential to allow scientists to explore marine life, mudslides, earthquakes, and water dynamics. As scientists strive for real-time processing of critical DAS data, this technology promises to provide even further innovation and insight.

Note: The research at the Lawrence Berkeley National Lab was funded by the Geothermal Technologies Office, part of the Office of Energy Efficiency and Renewable Energy (EERE) under the Department of Energy (DOE). The DOE does not endorse any specific technologies or companies.

News Article 1: Researchers Use Zayo's Dark Fiber to Unearth Clean Energy Sources

The Imperial Valley Dark Fiber Project, an initiative funded by the U.S. Department of Energy, kicked off in 2019. (Getty Images)

As telcos work on their sustainability efforts, Zayo Group is working with universities to find clean energy alternatives. Researchers from Rice University are leveraging Zayo's dark fiber to locate and monitor geothermal resources, or heat produced below the earth's surface.

Rice University collaborated with Lawrence Berkeley National Laboratory on the Imperial Valley Dark Fiber Project, an initiative that kicked off in 2019 and was funded by the U.S. Department of Energy (DOE).

The project, which Zayo last week announced was completed, focused on the use of dark fiber as seismic sensors to get a better sense of where geothermal resources are located. Analysis of the data is still very much underway, according to Dr. Jonathan Ajo-Franklin, one of Rice University's researchers on the project.

He explained the Imperial Valley initiative (which took place in the Southern California region of the same name) involved the use of Distributed Acoustic Sensing (DAS), "which basically allows you to use fiber optics to record small vibrations underground using a very high-speed pulse laser."

Essentially, DAS let the researchers "listen" for the geothermal sources.

Instead of digging trenches and installing their own fiber for the research, which can be time-consuming and costly, Ajo-Franklin's team got the idea to use fiber from existing telecom networks.

So, in 2019, Rice University tested its DAS technology on a stretch of fiber from ESnet, a network that serves DOE scientists and researchers. The fiber was located in California's Sacramento Basin.

"It worked really well," Ajo-Franklin told Fierce. "We got some good signs, we were able to detect some earthquakes and build pictures of what the near surface looked like in that area."

One of the challenges of looking for geothermal energy reserves is that many basins are "poorly explored," so there isn't much traditional data available that would explain how to find them. He noted dark fiber is well-suited for picking up ambient noise and using it to create a picture of what's underground.

After Ajo-Franklin's team (dubbed the Berkeley Lab-Rice team) applied for funding from DOE, they set out to find a dark fiber provider to collaborate with. Zayo, he said, "kind of fit all our constraints."

Zayo's role

For starters, Zayo has existing dark fiber infrastructure in Imperial Valley – enough that "allows for that testing to be done," said Jason Taylor, Zayo's SVP of Enterprise Sales.

Like other dark fiber providers, Zayo sells it to commercial customers and government agencies. But in this case, Zayo's dark fiber allowed the Berkeley Lab-Rice team "to connect the equipment that they needed on both ends to do the monitoring."

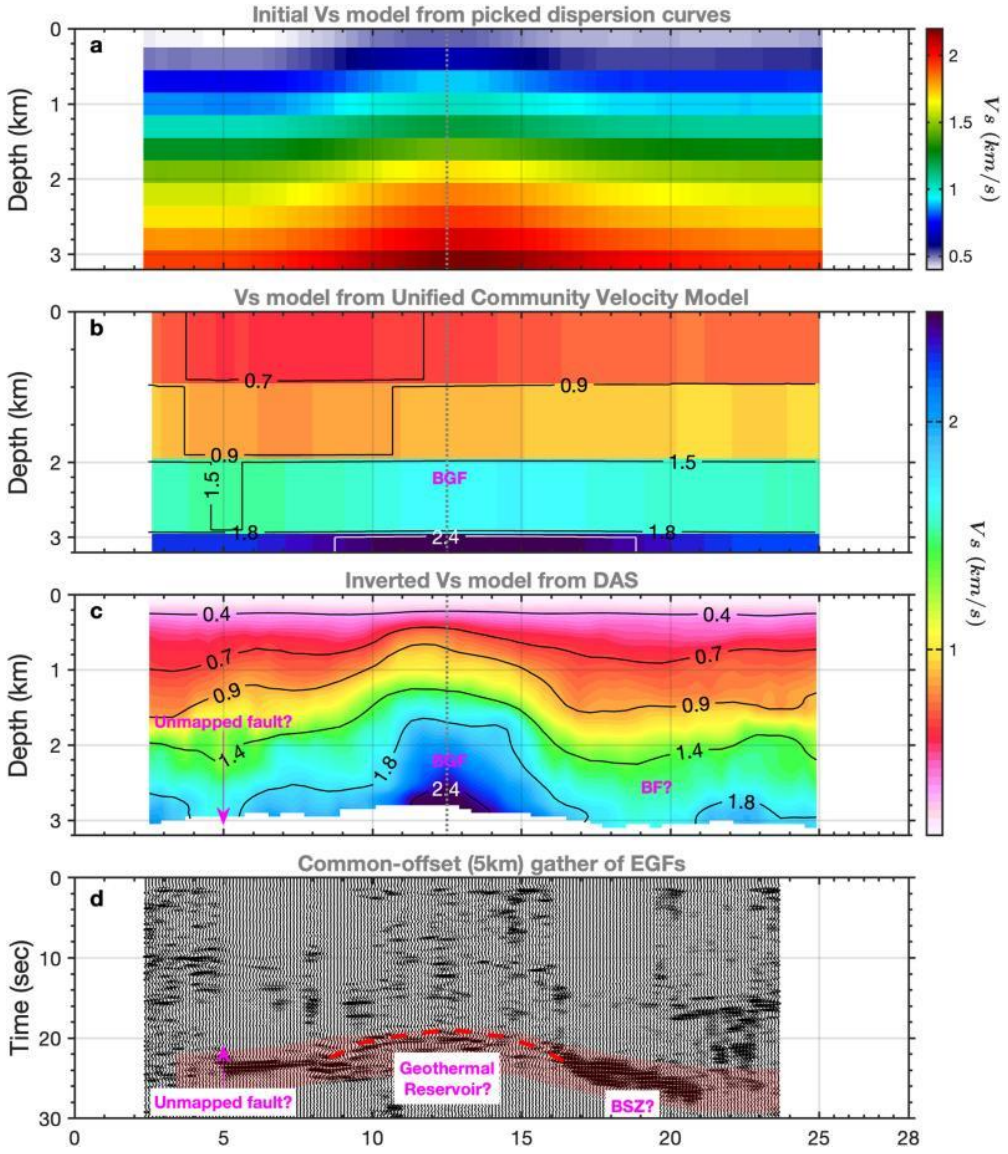
Taylor told Fierce Zayo "gets a lot of attention" from government agencies due to the amount of dark fiber the company possesses. Zayo has said its long-haul network spans over 17 million fiber miles and 142,000 route miles.

"In this instance, it was really taking a small piece of a long-haul route and using it for a different use case than what we normally look that," Taylor said.

He called out since the project kicked off, Zayo had "multiple research institutions" reach out to ask questions about the work that went into it, "so this could lead to other test trials being ran and maybe more information being learned."

The "most exciting" element of this project, Taylor went on to say, was "support[ing] a mission that positively impacts the environment."

"It's something that's a priority for us as it is [for] a lot of corporations, and this was a way we could show our support in a real way that should have a positive impact going forward," he said.



[Alt text: Imaging of the geothermal reservoir and fault. (Journal of Geophysical Research)]

The Berkeley Lab-Rice team also leveraged Zayo's dark fiber to test earthquake detection. The Imperial Valley project "recorded a tremendous amount of earthquakes which aren't picked up by the regional catalog," said Ajo-Franklin.

Those smaller earthquakes, he explained, helped the researchers determine "where there might be places for water to flow underground for geothermal production."

Additionally, the team used its findings to build an accurate model of "the velocity of seismic waves underneath the entire basin."

"That's the kind of thing which is really useful in sort of choosing the next place you might want to consider for exploration," Ajo-Franklin said.

News Article 2: Zayo Gets in on the Ground Floor of Dark Fiber Seismic Sensing Research

Zayo is getting in on the ground floor of a possible new dark fiber application – using the that involves connecting seismic sensors used in detecting sources of geothermal energy.

The company provided dark fiber underlying a research project in Imperial Valley, California with Lawrence Berkeley National Laboratory and Rice University that was funded by the U.S. Department of Energy. The project, known as the Imperial Valley Dark Fiber Project, kicked off in 2019 with the goal of developing a better way to find renewable geothermal resources that could be used to generate geothermal energy.

Geothermal energy is a renewable alternative to fossil fuels. But geothermal resources are difficult to locate. Traditional methods of locating them are labor intensive and often cost prohibitive.

Imperial Valley is known to be home to many hidden geothermal resources, according to Zayo.

Dark Fiber Seismic Sensing

To date, researchers prospecting for geothermal resources have relied on a few dozen seismic sensors deployed in a small, targeted area, Zayo explained in a press release about the project. By fusing dark fiber with traditional seismic sensors, the National Laboratory and Rice University researchers have been able to deploy thousands of sensors for a single project.

Using this approach, the researchers can take critical measurements every few meters, and prospecting costs can be substantially reduced.

"Geothermal research takes an incredible amount of collaboration," said Dr. Jonathan Ago-Franklin of Rice University, in a prepared statement. "Zayo's fiber infrastructure and expertise were a significant benefit to our team's research.

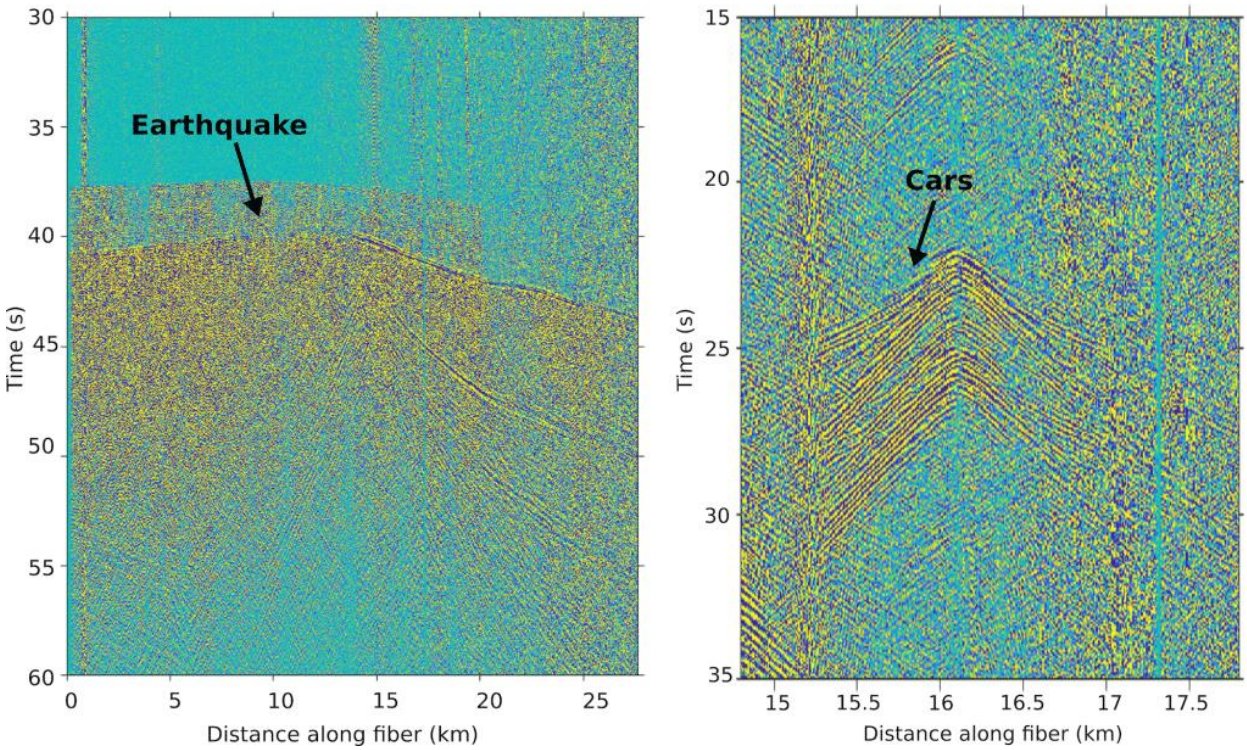
"We hope the great work of the Berkeley Lab and Rice University team will inspire new conversations about how fiber infrastructure can be leveraged in new ways to make a positive impact on our future," said Zayo CEO Steve Smith in a prepared statement.

The Imperial Valley researchers were able to use the sensor network to create larger, more detailed maps of the subsurface. Researchers also used Zayo's dark fiber to test other applications, including earthquake detection.

Another Dark Fiber Seismic Sensing Use Case

Another research project involving fiber uses the fiber itself to measure seismic activity. California Polytechnic University researchers have experimented with this in Humboldt County, California, one of the most seismically active areas in the U.S.

Fiber optic cables buried in the ground pick up specific frequencies, which can play a role in measuring seismic activity. Analysis of data collected from the ground via dark fiber can give researchers the ability to differentiate between seismic activity and a car, for example.



[Alt text: Imaging (2 graphs) of the distance along fiber (in km) over time (in s), with an earthquake flagged at 10 km and 40 s in the first and cars flagged at 15.8 km and 22 s in the second.]