POWER Engineers Environmental provides planning, permitting, compliance, EHS, engineering, and site assessment and corrective action services to clients worldwide. Across multiple industries, we specialize in the areas of air, water, waste, ecological, cultural and wastewater. And as part of POWER Engineers, we can provide integrated engineering and environmental solutions. With 45 offices located across the country and internationally, we have local resources and expertise where you need it.
In the electric utility world, one of the biggest challenges is routing new high-voltage transmission lines and siting new substations. Today’s special interest groups and the general public are more sophisticated and can mobilize quickly against a project. As a result, it is important to implement a robust planning process to set your project up for success, with the flexibility to be responsive to local community concerns.

Throughout my career of working on major electric transmission line and substation projects, I’ve developed a list of “key elements.” These fundamentals help lead to successful siting and permitting of projects for our clients.

**Develop a defensible purpose and need statement.** A solid, factual basis for the project with a defensible purpose and need statement is the first step towards success. Be prepared to answer questions, such as how the project will address future load growth, or if it is a tie-line for a new generation source.

**Clearly define the project description and project study area.** It sounds simple, but what exactly are you proposing to build? Minimize project description changes during permitting. When the study area is defined, does it take into account all reasonable route alternatives? What criteria were used to define the study area?

**Identify stakeholders and issues with early and continuous outreach.** Meet with appropriate federal, state, county and municipal agencies before you begin the permit application process. Early briefing meetings with elected officials and special interest groups will help identify issues and concerns.

**Integrate stakeholder and public input into the planning process.** Be prepared to document how comments are received and how they are used to make adjustments, respond to issues or apply mitigation. Tracking and documenting comments is important for the decision-making process, as well as any potential legal procedures that follow.

**Identify a reasonable range of alternatives.** Develop a reasonable range of spatial alternatives to evaluate for routes and substation sites. But don’t forget that analyzing alternatives can also include non-wires options, such as distributed generation, demand-side analysis or even underground versus overhead.

**Characterize alternative routes adequately for comparison.** Consider the end product needed for project approval (e.g., municipal conditional use permit, state certificate filing, National Environmental Policy Act compliance document) and make sure the key environmental resource studies match the level of analysis needed. Whether it’s wildlife resources, cultural resources and tribal consultation, visual resources, or wetland resources, address the permit conditions accordingly. Prepare a comprehensive, transparent analysis of the alternative routes and substation sites.

**Define decision criteria and use a defensible route selection process.** Sounds easy, but how did the project team document the route-screening process used to narrow down alternatives? How did your company select a preferred route? Is it clearly defined and understandable? Can it be duplicated and is it defensible? Mysterious criteria weighting and undocumented decision processes will lead a project down a road of turmoil and despair.

**Develop a partnership approach with federal, state and local agencies.** Clear and ongoing communication with key regulatory decision-makers is important. Share data and analysis results. Be nice and work collaboratively.

**Cultivate political support for the project and the process.** Engage communities, landowners and special interest groups through community working groups or advisory committee meetings throughout the project. Keep political leaders informed and up-to-date on the project status.

**Plan enough time and maintain patience.** It can be a long road to project approval sometimes. Educate your executive management team and senior company officials on the planning process and schedule. Keep them briefed on milestones.

Incorporating these key elements into your planning process and project execution is a formula for success on your next project.
The natural gas pipeline industry is constantly changing. Gone are the days of straight-line routes with limited agency or public involvement.

Today there are federal, state and local agency regulations and guidelines to ensure environmentally responsible and safe construction and operation of natural gas projects. And the public is demanding more transparency and involvement at every stage of the project.

With all the changes in the natural gas industry and the increasing public concern, is a smoother permitting process possible?

**Four Ways to Avoid Delays**

Despite the obvious difference of “above ground” versus “below ground,” the electric transmission and natural gas industries share many similarities. Both develop linear projects that include right-of-way easements, access roads, construction yards and station sites. Their projects require permits from many of the same federal, state and local agencies. And both industries have experienced increased public scrutiny over the last decade.

But for some recent natural gas projects, schedule delays have resulted in lost time and money. The reasons range from unforeseen permitting issues and last-minute changes to heavy public opposition.

Most of these project delays could be avoided by using a few project approaches routinely used in the electric transmission line industry.

1. **Build an Integrated Team**

The first approach to a smoother project is to build an integrated team from day one. Beginning with the kick-off meeting and throughout the planning process, include engineering, regulatory, environmental, construction and land acquisition representatives. Some companies have these disciplines in-house. If not, consider using a subcontractor to fill that role.
Any change can dramatically affect the schedule and add additional tasks to all disciplines. By integrating the team from the beginning, each member can evaluate how the change affects permitting, schedule and budget.

Take for instance a simple engineering modification that moves a route 75 feet to the north. Depending on the stage of the project, the engineering team would need to update drawings and workspace; the regulatory team would need to evaluate the modification if any legal applications had already been filed; the environmental team would need to re-evaluate and adjust any permitting; and the land acquisition team would need to determine if the modification would involve new landowners.

The goal is open communication. Each discipline must voice the implications of changes to the team before proceeding.

**2. Explore Multiple Routing and Siting Options**

Even though the shortest distance between two points is a straight line, that line is not always the best route. The second approach is to explore multiple routing and siting options. The public is interested not only in the route selected for the project, but also the routes you consider and eliminate as options.

Establish a study area large enough for a set of geographically diverse routing and siting options. Then evaluate the area for sensitive resources and areas of siting opportunities. These could be existing overhead transmission and communication lines, federal and local designated utility corridors, existing interstate and state highways, pipelines, railroads or areas with industrial development.

By developing multiple routing and siting options, the project team can evaluate potential resource and permitting issues in the area prior to selecting a final route. Rather than the straightest line, you’ll end up with the smoothest path through permitting.

**3. Host the Open House Early**

The third project approach is to change the timing of open house meetings. The open house is a time for the public to get acquainted with the project and to provide their input on how it is being developed.

For natural gas pipeline projects regulated under the Federal Energy Regulatory Commission (FERC), open house meetings typically occur later in the routing process, once a “preferred” route has already been identified.

In the electric transmission industry, open house meetings typically occur during the routing process when multiple routes are still being considered. This allows stakeholders to provide feedback and help shape which route will be selected for development.

Hosting the open house earlier gives the public more input in the route selection and ultimately results in better communication and better decision-making.

*A Different Approach* >>> continued on page 10
I am still amazed at where the path of environmental engineering has led me. For starters, this was never the official “plan.” In my family, it’s tradition to either work on cars or in aircraft production. To begin my career, I chose the latter.

Graduating with an Industrial and Manufacturing Engineering degree, the aircraft field was a perfect fit for me. The primary focus of everything I learned at Wichita State University was: Simplify a system and improve efficiency while maximizing production.

With that training in mind, along with my love for computers, I began designing parts for prop planes and working with SAP technology, part forecasting/Just-In-Time inventory systems, and part manufacturing compliance. I even got to fly a prop plane a few times!

Years later, I accepted a computer programmer position at a large chemical company. My passion for computers had only grown and I was excited to try something new. However, a year into working on IT projects with clients from all over the world, my boss approached me with a proposition. He asked if I would be interested in joining a newly-developed environmental program at one of the company’s chemical plants in Texas. Talk about a change of plans!

Throwing my career path to the wind, I agreed and moved from Kansas to Texas. As you can imagine, this move taught me many lessons.

Like the time I was called to investigate a “bird find” (any bird suspected to be affected by a chemical release) only to discover raccoons beat me to the punch. Or the time I faced my terrible fear of heights climbing a 250-foot industrial boiler stack for stack testing, and scaling four stories of see-through metal grating to inspect continuous emission monitoring system readings.

But overall, the lesson I took away happens to be one of my college professor’s favorite phrases: “Keep it simple, stupid,” or KISS.

The lesson began when my new boss asked me to fix a couple hundred Excel-based logs that the operators used to document environmental compliance activities. The task seemed easy, but once I examined the logs, it quickly became apparent that the system was a mess.

Many logs had broken links with no apparent data origination. Some were completely wiped from the system with only hard copies available. The digital signature system had many errors and was often unusable, and there were duplicate data entries spanning across multiple logs. The system’s flaws, in short, were overwhelming. But as I worked to come up with a solution, I imagined my professor telling me in his humorous, light-hearted voice, “Don’t you remember? Keep it simple, stupid!” With that in mind, I had a plan.

When building a sustainable system, simplicity should almost always be sought over complexity.
I interviewed operators and learned that they printed the logs before inspections, then manually entered the data into a control room computer or gave the printed logs to their shift supervisor. The high volumes of logs also conflicted with their normal job duties, and the “environmental lingo” made it difficult to understand, resulting in many incomplete or inaccurate logs.

I then interviewed the environmental compliance engineers processing the logs. Like the operators, many told me the logs were time-consuming and stressful. Due to an inconsistent storage method (online vs hard-copy), the engineers were constantly hunting down the location of the completed forms, a job function almost within itself. Entering the data into an internal compliance tracking system involved sifting through hundreds of logs—a process that frequently caused non-compliance with local and federal recordkeeping and inspection requirements.

My main objective was to reduce the excessive number of logs by merging them into simplified versions with clear requirements that everyone could understand. With frequent turnover at the site, I also enlisted help from the Corporate IT department to avoid further degradation of the logs.

Feeling confident in my assessment, I presented the issues and solutions to my boss. To my surprise, he opted to stick to the original plan of fixing formula errors for almost 200 operator logs. I felt defeated. Apparently, my KISS method had failed me. Slapping Band-Aids on my metaphorical wounds, I came up with another idea. To help my boss see how important this was for the whole team, I needed reinforcements. With his approval, I had another chance to make my case.

Individually I met with several experienced operators, shift supervisors and engineers to join my cause. I knew my boss would respect their opinion if they also approved the need for major reform. They happily agreed.

Next thing I knew, we were all crammed into a tiny trailer conference room and once again I was presenting my case. It was difficult at first, but after a lengthy discussion, we successfully negotiated the “terms and conditions” and I was granted permission to implement the changes.

To this day, every time I’m in a bind, I look to my past work experiences and advice given to me from some of my favorite experienced colleagues. While not the most thrilling story, fixing the operator logs taught me the value of understanding and utilizing your resources. When building a sustainable system, simplicity should almost always be sought over complexity. So, next time you encounter a vexatious problem… don’t forget to KISS.

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The KISS Principle

Aeronautical engineer Clarence “Kelly” Johnson formulated the KISS principle during World War II while leading a secret division named Lockheed Skunk Works, Lockheed Martin’s advanced aircraft development program.

Johnson coined the KISS principle to remind his team that their state-of-the-art jets still had to be repaired by average mechanics with basic tools. Today, this term is frequently used in software design, where the tendency to overcomplicate function or instruction can make programs unmanageable over time.
EPA's past rule interpretation only allowed project emission increases to be considered in Step 1 while any project emission decreases were evaluated during the Step 2 netting phase. The proposed revision would allow both project emission increases and decreases or “Project Emission Accounting” during Step 1.

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**USFWS, NMFS Approve Revisions to Endangered Species Act**

On October 28, proposed revisions to the Endangered Species Act (ESA) by the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) were officially published in the Federal Register. The ESA serves as the United States’ primary mandated legislation focused on the protection of critically imperiled species from impacts of human expansion. The approved changes will directly affect the definitions of how threatened and endangered species are classified, how critical habitat is determined and requirements during agency consultation. Specifically, revisions to Section 4 relate to the requirements and methods implemented when adding or removing species from listing as well as revising the requirements when establishing critical habitat for individual species. Section 7 changes address when and if consultations with other federal agencies are necessary and to what extent. The revisions to these sections are meant to improve the overall efficiency of implementing the ESA requirements and to streamline the environmental review process.

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**EPA to Re-Propose Regulation Science Transparency Rule**

At a congressional hearing in September, EPA Administrator Andrew Wheeler indicated that the Agency will not be issuing a final version of its controversial proposed rule to limit the use of scientific studies in developing major new regulations by the end of this year, as originally planned. Instead, the Agency will issue a supplemental proposal in early 2020 applicable to future rule-making. The proposed rule, originally published in April 2018, was intended to ensure that the science underlying its regulatory actions, including all relied-upon data and models, is publicly available in a manner sufficient for independent validation. EPA decided on the re-proposal after receiving more than 600,000 comments from the public on the proposed rule.

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**Kirtland’s Warbler Removed from the Endangered Species List**

On October 8, the USFWS removed the Kirtland’s warbler from the federal
Endangered Species List. Reduced to just 167 nesting pairs in the mid-1970s, the Kirtland’s warbler population has steadily increased to over 2,000 pairs. Historically, the small songbird was reliant on wildfires to maintain its breeding habitat in young jack pine forest stands. Today, due to modern wildfire suppression, the species is mainly reliant on conservation efforts. While the vast majority of nesting occurs in northern Michigan, it can also be found in northern Wisconsin and Ontario. The 2,000 documented nesting pairs is double the goal identified in the species’ recovery plan and populations have continued to grow and exceed their recovery goals for the past 17 years.

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**MACT Standards for Ethylene Production**
On September 5, EPA proposed amendments to the Ethylene Production Maximum Achievable Control Technology (MACT) standard based on the Clean Air Act-mandated residual risk and technology review for the source category. EPA seeks to clarify startup, shutdown and malfunction (SSM) requirements including eliminating exemptions during SSM events and proposing alternative work practice standards for certain SSM events, such as decoking of ethylene cracking furnaces and pressure relief device releases. Additionally, EPA is proposing to strengthen the heat exchange system and storage vessel control requirements, add monitoring requirements for flares and require electronic submission of notification of compliance status and performance test reports. Comments on the proposed rule are due November 25, 2019.

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**OSHA Requests Feedback on Respirable Crystalline Silica Standard**
On August 15, the Occupational Safety and Health Administration (OSHA) requested information, data and comments on possible engineering and work practice control methods that are not currently included for 18 common construction tasks (known as Table 1) of the Respirable Crystalline Silica standard for Construction. Information submitted would allow OSHA to consider new control methods for equipment that generates exposures to silica under different workplace conditions. Expanding Table 1 to include additional engineering and work practice control methods, equipment and tasks could provide employers with more flexibility and reduce regulatory burdens while maintaining protections for employees.

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**TCEQ Hosts Public Hearing on Edwards Aquifer Protection Program**
To promote public input on the regulatory process, the Texas Commission on Environmental Quality (TCEQ) hosted public hearings on October 28 and 29 to receive written or oral comments related to the Edwards Aquifer Protection Program. Specific feedback on RG-348 (Technical Guidance), innovative technology, Aggregate Production Operations and compliance monitoring of best management practices was requested. Comments received during the meeting will be published by TCEQ.

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**State News**

PADEP Developing RACT 3 Requirements
On October 17, the Pennsylvania Department of Environmental Protection (PADEP) presented an overview of the upcoming third update to the Reasonably Available Control Technology (RACT 3) requirements. To satisfy federal mandates, the PADEP will be re-evaluating existing RACT requirements and considering the “lessons learned” from the RACT 2 rulemaking. Case-by-case RACT 2 determinations submitted to EPA will be resubmitted as satisfying RACT 3 requirements. Specifically, the PADEP will re-evaluate all presumptive RACT 2 requirements; clarify RACT requirements for combustion units firing multiple fuels; evaluate NOx RACT requirements for large combined-cycle natural gas-fired turbines; streamline boiler tune-up procedures; and re-evaluate presumptive emission limitations and averaging periods for large electric generating units. Finally, the PADEP will include notification requirements for all facilities that are subject to RACT 3, and facilities will need to explain how they will comply with the requirements, even if all sources are subject to presumptive RACT.

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Ohio Governor Orders Analysis of Drinking Water for PFAS Compounds

On September 27, Ohio Governor Mike DeWine directed the Ohio EPA and the Ohio Department of Health (ODH) to develop an action plan by December 1, 2019, to test public and private water systems for the presence of per- and polyfluoroalkyl (PFAS) compounds. PFAS include a large number of man-made chemicals used in a variety of products, such as carpeting, nonstick cookware and food packaging. The Governor’s directive specifically targets drinking water systems located “near known sources” of PFAS, such as firefighting training sites and manufacturing facilities. The Governor’s directive, however, does not define what is considered “near” a PFAS source, nor does it define how a “known source” of PFAS will be determined, leaving unanswered questions for affected industries and water systems operators. These questions, and others, will need to be addressed as the requested action plan is developed by the EPA and ODH.

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KDEP Announces 2020 Funding for Water Pollution Control Projects

On October 18, the Kentucky Energy and Environmental Cabinet’s Department for Environmental Projection announced they are accepting applications for 2020 funding of nonpoint source (NPS) pollution control projects. Kentucky receives federal funding through Section 319(h) of the Clean Water Act to implement NPS pollution control programs. Funds can be used to pay for up to 60 percent of the total cost of each project; a 40 percent nonfederal match is required. Priority will be given to projects involving watershed plan development and implementation for impaired waters, source water protection areas and the protection of special-use waters with identified threats. Other eligible projects include those aimed at cleaning up polluted waterways by use of best management practices technology, demonstrations, technical training, inspections and compliance, education and outreach to improve water quality. Applications including the project proposal must be submitted by December 3, 2019.

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PADEP Finalizes Management of Fill Policy

The PADEP finalized its significantly revised Management of Fill Policy in early November 2019. The policy will go into effect on January 1, 2020, and may be applicable to any fill not placed prior to this date. Important changes include new and revised definitions, modifications to due diligence and sampling/analytical requirements (including a project-specific sampling plan), incorporation of Act 2 numeric standards (some of which are lower than the existing policy), allowance for background conditions, and possible EPA involvement if PCBs are present.

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TCEQ Begins Discussions on 2021 TPDES MSGP Renewal

On October 18, the TCEQ Stormwater Stakeholders Group hosted a meeting to discuss the 2021 renewal of the TPDES Multi-Sector General Permit (MSGP) No. TRX050000. The TCEQ presented a series of preliminary proposed changes to the MSGP as part of the renewal process, including an increased focus on the electronic reporting of monitoring data, adjustments to benchmark monitoring levels for Sectors T and U, changes to the Notice of Intent and Notice of Change forms, modified requirements for Sectors J and L, and miscellaneous changes to improve the clarity of the text. The proposed changes to the TCEQ MSGP may be impacted by the issuance of the 2020 EPA MSGP. A draft of the 2020 EPA MSGP is anticipated to be released in late 2019.

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Ohio Proposes Update to Primary Drinking Water Standards Rule

On October 9, the Ohio EPA proposed updates to the Primary Drinking Water Standards Rule. The proposed revisions include additional language to establish a triggered approach for evaluating the best treatment options for consecutive systems that have elevated Disinfection byproducts (DBP) levels. This would ensure wholesale water suppliers are responsible for conveying water that is below the maximum contaminant levels, thus allowing compliance with the Safe Drinking Water Act. The additional language would also help establish an effort between wholesale water suppliers and consecutive systems to work together to complete Operational Evaluation Level reports. The reports would address the location and source of the elevated DBP levels throughout the system.

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Tribe consultation” refers to the federal government’s legal obligation to consult with Native American tribes on energy and infrastructure projects. Whenever a project requires federal approval—a water-crossing permit from the U.S. Army Corps of Engineers, for instance, or a certificate from the Federal Energy Regulatory Commission to build a natural gas pipeline—the tribal consultation requirement kicks in.

Projects need not be on tribal land for the tribal consultation requirement to apply. On the contrary, the National Environmental Policy Act (NEPA) and the National Historic Preservation Act (NHPA), along with many other federal laws, mandate that the lead agency on each project must consult with affected Indian tribes regardless of whether the project is on public or private land.

Energy and mining companies, utilities, highway authorities and other project proponents are frequently caught off guard particularly in parts of the country located far from Indian reservations. Yet locating reservation boundaries is only a first step. Proponents must also be aware of each tribes’ original homelands or “aboriginal territory.” NEPA and NHPA respect that tribes, which have existed since time immemorial, retain ongoing cultural connections to these lands.

When Is Consultation “Meaningful”?
A federal agency’s consultation with tribes must be “meaningful” to be legally effective. During the Obama Administration, federal agencies developed individualized tribal consultation policies, which have largely continued during the Trump Administration. These policies have been increasingly tested in court.

The U.S. District Court in Wyoming granted a preliminary injunction against the Bureau of Land Management (BLM) in 2015 to stop, on a nationwide basis, enforcing its final rule related to hydraulic fracturing or “fracking” on federal and Indian lands. In the case, Wyoming v. Jewell, the BLM insisted it had engaged in extensive tribal consultations with the Ute Indian Tribe of Uintah and Ouray Reservation by holding meetings, offering to meet individually with tribal representatives and distributing copies of the draft rule for comment. The court disagreed, characterizing BLM’s meetings as “more intended as informational and outreach sessions,” as opposed to consultations where tribal representatives’ expressed concerns were addressed.

These and other cases show that the standard for what constitutes meaningful consultation is still a work in progress. Yet what is clear is that project proponents can and should support the official consultation process to maximize opportunities for mutual collaboration and to mitigate potential project risk. Here are some practical steps.

1. Confer with tribes before projects are finalized. Proponents should reach out to tribes as early as possible in the planning process, using non-disclosure agreements as needed. Some federal agencies maintain lists or registries of tribes with cultural affiliation to specific geographical areas, as do many consulting companies.

2. Retain experienced legal counsel. It helps to retain legal counsel who are experts in tribal law and federal Indian law at the inception of the project. Because tribes are sovereign, they are accustomed to doing business with and through attorneys just as federal and state governments do. Lawyers are invaluable in helping federal agencies create a comprehensive administrative record attesting that the tribal consultation process is conducted in a meaningful fashion.

3. Provide resources to tribes to support consultation. Tribal governments are sometimes underfunded and understaffed, which means their ability to participate in tribal consultation is limited by other competing considerations. It is not unusual for project proponents to provide reasonable financial resources to tribes, when requested by tribes to do so. For example, a proponent might arrange for tribes to commission their own ethnographic studies of the project area. Helping tribes obtain more complete information about a project makes for a more informed government-to-government consultation. Tribes may also request proponents to support tribal monitors throughout the cultural resource survey process, as well as during project construction and mitigation.

4. Explore creative project mitigation. It is not usual for tribes to voluntarily enter into confidential mitigation agreements with project proponents when cultural resources may be adversely affected. Agreements like this can provide flexibility for tribes and companies alike, all within the existing federal statutory framework. Examples of mitigation include educational, scholarship, and Native language and cultural preservation programs. The point is to think creatively and listen closely to tribes and their concerns.

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4. Document All Considered Routes
The final approach worth considering from the electric transmission industry is documenting the routing methodology and analysis as it occurs.

FERC applications require a robust alternatives analysis. As routes are considered, document them in detail—even if the integrated team has not been assembled.

Many natural gas alternative sections are pieced together with emails from engineering, environmental, system design and land acquisition long after a route has been selected and somewhere in the middle of developing an application.

Documenting all the routing options explored, no matter how small, demonstrates to FERC and the public that you have done your homework. It also means that the alternatives section is almost complete before you even start working on the FERC application.

Save Time and Money
Now, imagine your next project. You put together an integrated team that provides input on the study area. You develop alternatives using a multiple routing and siting approach. You include the public during the routing process. And you document each step along the way.

Does it always function this well for electric transmission line projects? Definitely not, but when it does, it saves a considerable amount of time and money.

So, at the start of your next natural gas project, why not consider a different approach? It might help your project run a lot more smoothly. 🤔