

# E-PARCC

COLLABORATIVE GOVERNANCE INITIATIVE

Syracuse University

Maxwell School of Citizenship and Public Affairs

Program for the Advancement of Research on Conflict and Collaboration

## **Fracked: Uncertainties in Negotiated Rule Making SIMULATION**

### **Summary**

This simulation exercise draws attention to the influence that information uncertainty and changing information shapes multi-actor negotiation processes, particularly when the information is scientific and pertains to biophysical environmental quality. By inserting data from an environmental study midway through a negotiated rule making process for regulating hydraulic fracturing activity, the simulation exposes students to the dynamic nature of negotiations when they occur amongst high levels of uncertainty regarding problem information and resulting impacts on power and trust. Instructors using the simulation will have the opportunity to teach about negotiated rulemaking, multi-actor interest-based negotiation, hydraulic fracturing, and public policy making under uncertainty.

This simulation was a winner in E-PARCC's 2014-15 "Collaborative Public Management, Collaborative Governance, and Collaborative Problem Solving" teaching case and simulation competition. It was double-blind peer reviewed by a committee of academics and practitioners. It was written by Rob Alexander, Natalie Abel, and Matthew Williams of James Madison University. This simulation is intended for classroom discussion and is not intended to suggest either effective or ineffective handling of the situation depicted. It is brought to you by E-PARCC, part of the Syracuse University Maxwell School's Collaborative Governance Initiative, a subset of the Program for the Advancement of Research on Conflict and Collaboration (PARCC). This material may be copied as many times as needed as long as the authors are given full credit for their work.

## Background Information

*Note: This simulation is fictional but draws upon actual geographies and policy contexts in the state of Virginia. However, none of this simulation should be construed as part of a true story.*

### Introduction

It seemed like a typical day for Laurie Abel as she packed up lunches for her kids before getting them to the bus stop for the thirty-minute trip into town for school, but the fact that Jack had made it to the breakfast table before Maria was unusual. While Maria showed signs of a cold over the past week, that never seemed to slow her down. Heading up to Maria's room, she found her daughter still in bed, complaining of an upset stomach and headache while still coughing. . . definitely an unusual set of symptoms. Picking up the phone to call Dr. Pearson, Laurie couldn't help but think about similar stories of sick kids told by her neighbors at church and the fact that what might just be this year's flu seemed to start when the new gas drilling wells appeared in Luis Eggleston's farm fields last fall. Could there be a link? Or was it just coincidence? The possibilities were disconcerting enough to think more about some of these recent changes in Windsor, Virginia.

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The community of Windsor in Charles County is a small, agricultural and coal-mining community in southwestern Virginia that had hit hard times in the early 1990s when the easy-to-reach coal resources ran out, the costs of further extraction proved too high, and the coal company left.

However, in 2008, new cost-effective technologies emerged on the market that made it possible for extraction of the natural gas that also existed within the shale around the coal beds. When drilling companies from Texas and Wyoming arrived, the lease bonuses they offered were in dollar amounts not heard in Windsor since the 1980s. Some, like Luis Eggleston, signed on right away. Others, like some of Laurie Abel's friends and church members, were more cautious. However, this new hydraulic fracturing drilling technique - nicknamed 'hydrofracking' - seemed to be here to stay and the impacts - both positive and negative - were just beginning to become known. With the mysterious flu-like illness going around, various individuals in Charles County wanted information . . . what exactly was hydrofracking and were there downsides to the economic windfalls?

### What is Hydrofracking?

For Charles County, it all starts with the Marcellus Shale - a dense rock formation formed over 390 million years ago under 90,000 square miles of Pennsylvania, Ohio, West Virginia, New York, and parts of western Virginia (Figure 1). Scientists estimate that this formation contains hundreds of trillions of cubic feet of oil and gas . . . an amount that could potentially eliminate the United States' dependence on foreign oil and lessen worries about impending energy crises.<sup>1</sup>

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<sup>1</sup> <http://pubs.usgs.gov/fs/2011/3092/>, February 15, 2015

Figure 1



Pockets of natural gas in the Marcellus Shale have been vertically drilled for more than 50 years. However, with new horizontal drilling technologies available, wells now extend vertically downward about 5,000 to 9,000 feet and then up to 10,000 feet horizontally. In order for the natural gas to escape from these deep underground pockets, the rock must be fractured. First, the drillers insert a steel pipe into the drilled hole and encase it with cement to prevent leaks of both chemicals used in the process as well as the natural gas itself. When this well casing reaches the depths where the gas is embedded in the shale layers, horizontal drilling occurs, preparing the well for the 'frack'. To fracture the rock, drillers force three to five million gallons of a water and chemical mix (slick water) into the well casing at high pressures to break the rocks and release the gas. The chemicals are added to prevent microorganism growth, to prevent the corrosion of piping, to hold the shale fractures open, and to allow the fracturing to occur at lower pressures faster.<sup>2</sup> In many instances, chemical manufacturers are not required to disclose the chemicals used in slick water; this information is kept private due to trade secret laws.

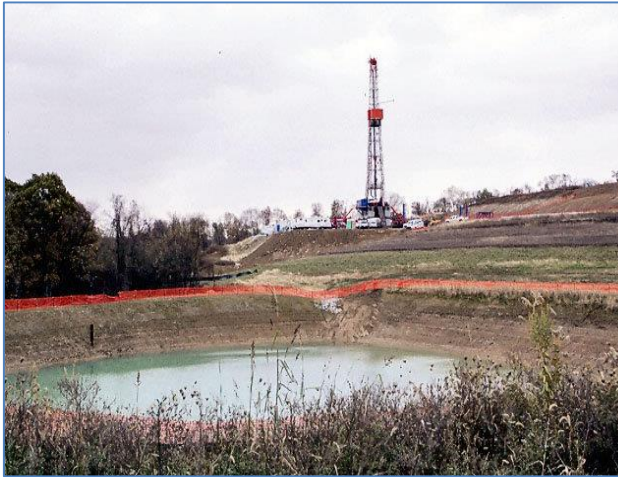
Approximately 10-30% of the slick water returns to the well surface after fracking has occurred and is called flowback. This flowback is then treated and used as slick water at other well sites, treated on-site and held in lined containment pools, hauled off-site to waste water treatment

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<sup>2</sup> <http://exploreshale.org/>, April 25, 3014

plants, or disposed through deep-water injection strategies. The remaining slick water stays within the shale formation where the frack occurred<sup>3</sup>.

**A lined pool holding slick water flowback<sup>4</sup>**



**Slick water pumped into a holding pool<sup>5</sup>**



These advancements in technique have greatly increased the output potential for each individual well site as horizontal wells produce three to five times more than vertical drilling alone.

### **Boon and Boom for Charles County**

Sixty years ago, Charles County relied on coal extraction as the driving economic force. Therefore, when the 1990 coal economy bust hit, the economic futures of most families took a nosedive. Many citizens lost their jobs and had no skills or means to make money elsewhere. Given the demographic challenges (Table 1) to taking advantage of more contemporary economic development pathways (i.e. computers and information technology services), a return to natural resource extraction seemed to be a gift.

**Table 1: Demographic Snapshot in 2010, 2013 Estimates**

Variable	Charles County	State of Virginia
<b>Population (Density)</b>	15,987 (49/sq mi)	8, 326,289 (202/sq mi)
<b>% Under 18</b>	22%	22.6%
<b>% Over 65</b>	17.3%	13.4%
<b>% White</b>	98.6%	70.8%
<b>Median Income</b>	<b>\$23,431</b>	<b>\$63,907</b>
<b>Per Capita Income</b>	<b>\$15,822</b>	<b>\$48,733</b>
<b>% College Degree or More</b>	6.7%	44.6%
<b>% Unemployed</b>	7.9%	4.8%

<sup>3</sup> <http://exploreshale.org/>, April 25, 2014

<sup>4</sup> [http://www.syracuse.com/news/index.ssf/2010/09/lawsuit\\_hydrofracking\\_fluid\\_ru.html](http://www.syracuse.com/news/index.ssf/2010/09/lawsuit_hydrofracking_fluid_ru.html), April 25, 2014

<sup>5</sup> <http://www.popularresistance.org/100000-signatures-for-a-moratorium-on-fracking-delivered-to-gov-tom-corbett/>, April 25, 2014

For example, Tina Corson, mother of six and the wife of a carpenter, inherited her father's expansive 750 acre farm when he passed away seven years ago. A poor family with already too much on their plate, they had trouble keeping up with the farm. Thus, they sold all the animals and let the fields go ... until a Donnelly Brothers Drilling representative approached them about leasing their mineral rights. Feeling like this was a great, once-in-a-lifetime opportunity, they signed on immediately, earning a \$250,000 bonus. After paying off debts and bills, they had enough left over to fix up their farmhouse and restore the main barn on the property, just the way Tina's father would have liked to have seen.

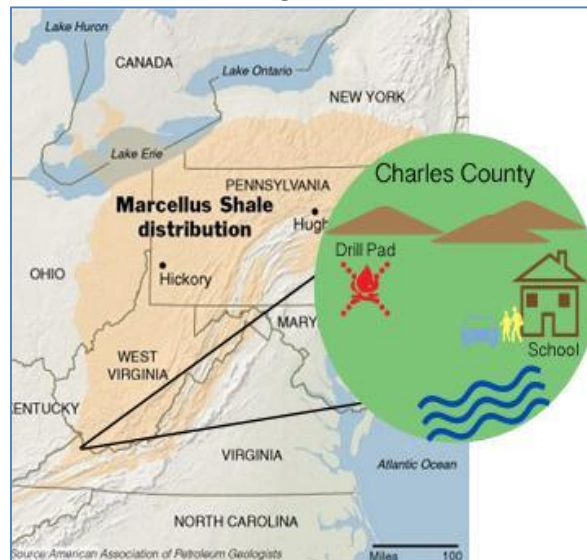
Pretty quickly, most residents in the western half of the county received letters from drilling companies that offered a five year option to drill on their land, whether or not the option would ever be implemented. Without much fanfare, several landowners signed on, thinking that nothing would ever happen but that they would still get to pocket the bonus, despite the clause in the leases allowing for a decrease in these payments should regulations restricting industry operations appear during the life of the leases. With private property rights sentiment running strong in Charles County and a 'do as you will on your own property' attitude prevailing amongst the locals, little thought was given to the implications of who leased where and when.

Then, in 2010, the drilling pads started appearing.

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As Laurie Abel watched her kids get out of the car and walk up to the school building, the pad located in the field just beyond the playground caught her eye (Figure 2).

**Figure 2**



Over the past few months, Laurie had spent a good deal of time on the internet and discovered three different situations where groundwater contamination was linked to hydrofracking activity.<sup>6</sup>

First, inadequate water management plans sometimes allowed fracking silt and debris to run off-site into groundwater supplies. Second, slick water surface spills leached into the ground, making their way into underground water supplies. Lastly, methane migrated from the shale rock layers up into aquifers, particularly when poor cementing around the well casing led to structural failures.

Despite the fact that no credible information existed in Charles County that linked any hydrofracking activity to the bizarre flu that was going around, Laurie felt that something needed to be said and, if necessary, done. But how? The drilling had brought much-needed income to residents and generated scarce tax revenue for Windsor and Charles County . . . taking action against such forces would be unpopular and difficult.

Caught between the need for economic stimulation and the concern for public safety and health, Laurie knew that the path would be difficult. However, she felt strongly that government *could* play a role to balance these competing interests. She felt that her children's health – and economic future – both depended upon it.

Determined to forge that path, Laurie, with support from her spouse, brought together a close circle of other mothers from her church to form Mothers Asking About Drilling in Our Neighborhoods (MAADON) as a grassroots activist voice to ensure safe and smart development of natural gas resources. What started as informal conversations in her living room grew to a consistent, and increasingly loud, voice at community meetings and in the local newspaper. Soon, Laurie was known not only to the drilling companies doing business in Charles County but also to her state Delegate and Senator. The more that Laurie learned about the hydrofracking process and the regulatory approach of the state, the more determined she became to make some changes to the system.

### **Regulatory Environment**

As MAADON discovered through their data collection, the regulatory framework for hydrofracking activity around the country in 2015 largely consisted of a mishmash of state-level policies that emerged in the absence of any significant regulation from the federal government. Specifically, they found the following:

*Federal Response.* There was no direct regulation of hydraulic fracturing by the federal government. In fact, the Energy Policy Act of 2005 exempted fracking from federal regulation under the Safe Drinking Water Act (SDWA). However, portions of the hydrofracking process, such as the use of diesel fuels and the disposal of slick water, are covered under SDWA and the

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<sup>6</sup> <http://www2.epa.gov/region8/pavillion>, February 15, 2015

Clean Water Act. In addition, potential chemical disclosure rules could be developed under the Toxic Substance Control Act.<sup>7</sup>

*State Responses.* Given the lack of comprehensive federal regulation of hydraulic fracturing, regulatory environments varied from state to state with the result being that no real common system or pattern existed. Instead, state regulatory policies emerged from gradual modification of existing policies and provisions as opposed to new policy adoption.<sup>8</sup>

However, all states required some form of permitting for the siting and operation of wells. Drilling companies have to provide information about the location, depth, construction, water use, and emergency plans for the site to the state regulatory agency. Examples of permitting programs that exist as of 2015 are as follows<sup>9</sup>:

**Alabama:** Pay a \$175 fee and send a proposal that includes the depth of the proposed fracturing as well as an inventory of fresh water supply wells with a quarter mile of the well.

**Montana:** The proposed fracking request must go through a public notice and hearing process. Montana's regulatory agency may regulate the volume and characteristics of the fluids that will be used and impose requirements on the well. When horizontal drilling is proposed, landowners may protest the spacing of the well if they believe it is too close to their property.

**Ohio:** The regulatory agency may deny permits to companies due to outstanding violations. Drilling in urbanized areas has specific requirements such as a site visit to evaluate any site-specific qualifications that may be necessary to incorporate into the permit.

**Pennsylvania:** Permit applications require that companies disclose where they will secure the water used in the process and where it will be stored. If gathering water from a freshwater source, the expected impact on that water resource must be specified and the appropriate river basin commission must give approval. Wells cannot be drilled within 200 feet of structures or within 100 feet of streams. Waste fluids created from the process must be treated at an authorized water treatment facility and approval for the facility to process this wastewater must be gained from the Department of Environmental Protection.

Other relevant policy approaches regarding hydrofracking include moratoriums and severance taxes. New York issued a **moratorium** on fracking in 2010 that was confirmed by the Governor in 2014. **Severance taxes** are taxes on the amount of natural gas produced from a well. Policy makers see severance taxes as a way for drilling companies to pay for any negative externalities that may occur. However, states have primarily put the revenue from existing severance taxes

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<sup>7</sup> <http://www2.epa.gov/hydraulicfracturing>, February 15, 2015

<sup>8</sup> Rabe, B. G. (2014). Shale play politics: The intergovernmental odyssey of American shale governance. *Environmental science & technology*, 48(15), 8369-8375.

<sup>9</sup> <http://www.ncsl.org/documents/energy/NaturalGasDevLeg313.pdf>, February 15, 2015

into general funds and not in programs designed to mitigate concerns specific to the local areas involved in fracking.<sup>10</sup>

### **Virginia's Regulatory Environment**

While this national-level information showed MAADON the range of public policy programs designed to regulate hydrofracking, it was the status of regulation in Virginia that captured most of their attention. Conversations with the legislative staff of their state elected officials and searches through state code online revealed the following:

The Department of Mines, Minerals, and Energy (DMME) is the state agency responsible for monitoring and regulating natural gas drilling. The DMME requires the drilling party to perform site-specific assessments of surface and underground conditions to ensure drilling won't occur in areas with direct contact to valuable surface and ground waters. The DMME also monitors the volume of water used for well development and the methods used to stimulate the frack. Drilling fluids must either be disposed of in an EPA certified waste disposal well or be dispersed on land after meeting certain requirements. MAADON also noted that Virginia law allows counties to levy a three percent severance tax if they wish on the gross receipts of gas sales<sup>11</sup>. However, whether or not full enforcement of these regulations would occur remained to be seen. It was no secret to MAADON that the state budget had been tight the past few years and that DMME was severely understaffed. While still subject to the same tight budgets, the Department of Environmental Quality (DEQ) also has the technical expertise and legislative authority to monitor the slick water component of hydrofracking processes.

Additional state legislation relevant to the situation includes the state Freedom of Information Act and the fact that Virginia is both a Dillon Rule state as well as an adopter of the Uniform Trade Secrets Act (UTSA) (<http://tinyurl.com/oghascj>). A Dillon Rule state is one that limits the ability of local governments to act autonomously. The UTSA is legislation that aims to prevent misappropriation of information unique to processes that produce economic value.

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### **A Regulatory Opportunity**

In January, a window of opportunity opened for Laurie and her colleagues in MAADON. The state's new governor, who was interested in avoiding the political morass that hydrofracking regulations created in other states, ordered the DMME to announce a *negotiated rule making* process regarding new state rules for disclosing chemicals used in slick water and directed DMME staff to convene stakeholders at both the state level as well as within Charles County, which was the first locality to experience hydrofracking processes.

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<sup>10</sup> Rabe, B. G. (2014). Shale play politics: The intergovernmental odyssey of American shale governance. *Environmental science & technology*, 48(15), 8369-8375.

<sup>11</sup> <http://www.dmme.virginia.gov/dgo/HydraulicFracturing.shtml>, April 28, 2014



Normally, the DMME promulgates rules and guidelines through standard rulemaking processes with public comment periods and expert deliberation. However, according to Virginia law<sup>12</sup>, negotiated rulemaking is an alternate process used when such regulations are considered controversial and vulnerable to long litigious processes. In negotiated rule making, the DMME commits to adopting regulations formed through a negotiation amongst key stakeholders where the stakeholders achieve consensus regarding the rule. Should consensus not be reached, the agency reverts to traditional rulemaking and establishes its own rule.

This was the opportunity that MAADON sought and, through a consistent campaign to the Governor's office for inclusion, Laurie received her invitation to participate along with representatives from state agencies, the Governor's office, an environmental advocacy group, drilling companies, an economic development group, and local government. The negotiated rule making process created a window for all stakeholders to influence how the state would balance the multiple interests at play in Charles County and across the state.

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## Group Instructions

The Governor's Office has contracted neutral facilitators to run the process. These neutrals work at Resolve, a non-profit consulting firm with over thirty-five years of experience helping multi-stakeholder groups achieve collaborative outcomes (<http://www.resolve.org/>). Because Resolve does not have a stake in this particular negotiation, the Governor feels comfortable in the facilitator's neutral objectivity and believes that their additional expertise in energy and environmental issues is a plus.

Per instructions from the Governor and in consultation with DMME and DEQ, the scope of the negotiation centers around three issue questions specific to public health and environmental quality concerns:

1. **Chemical Disclosure:** What chemicals utilized in slick water should be disclosed to the public?
2. **Monitoring Compliance:** Who should monitor the use, storage, and treatment of slick water and slick water flowback?
3. **Monitoring Frequency:** How frequently should monitoring occur?

Details of these issues are as follows:

### 1. What chemicals should be on chemical disclosure lists?

Currently, there are five known chemicals that *could be* included in the slick water mix for a specific well in Charles County – methanol, potassium carbonate, boric acid, ethylene glycol, and isopropyl alcohol. Known human health impacts of these chemicals at high concentrations are as follows:

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<sup>12</sup> <http://law.lis.virginia.gov/admincode/title4/agency25/chapter11/section20/>, February 15, 2015

*Methanol* is toxic when a large enough quantity is ingested, inhaled, or exposed to skin and absorbed. Symptoms include drowsiness, confusion, sickness and abdominal pain. If substantial exposure persists, coma, shock, and kidney failure are common occurrences. Depending on the method of exposure, methanol could lead to burning of the eyes or skin, blindness, permanent damage to the nervous system, headaches, and harmful effects to the reproduction system<sup>13</sup>.

If swallowed in its pure form, *potassium carbonate* causes serious damage and induces vomiting, a slow, weak pulse, and irregularities in heart rhythm. Inhalation can lead to impaired respiratory function and diseases such as chronic bronchitis<sup>14</sup>.

*Boric acid* is commonly used in household cleaning products and fertilizers and is shown to induce nausea, vomiting, abdominal pain, diarrhea, headaches, lethargy, weakness, restlessness, tremors, unconsciousness, respiratory depression, and, in high levels of exposure, kidney failure, shock and occasional death<sup>15</sup>.

*Ethylene glycol* has many uses, including as antifreeze in cooling and heating systems, in hydraulic brake fluids, and as a solvent. Ingesting large quantities causes three stages of health effects: central nervous system (CNS) depression, followed by cardiopulmonary effects and renal damage.<sup>16</sup>

*Isopropyl alcohol* is used in antifreeze, industrial solvents, essential oils, quick drying oils, body rubs, hand lotions, after shave lotions, cosmetics and pharmaceuticals. Toxic effects include central nervous system depression, liver, kidney, cardiovascular depression and brain damage. It can also cause drowsiness, respiratory depression, irritation of mucous membranes and eyes, vomiting, and slow respiration.<sup>17</sup>

It is important to note that the above descriptions articulate impacts of exposures to high concentrations of these chemicals at increasing periods of time. Therefore, an understanding of *levels of toxicity* is required (Table 2). **A highly toxic chemical is defined as one where noticeable health impacts occur at a very low concentration, whereas a chemical with low toxicity requires a much greater concentration to incur the same impact levels.** The toxicity levels in Table 2 do not refer to whether the chemical causes significant health effects or the severity of those health effects. It merely refers to the level of concentration needed for that chemical to begin incurring negative health effects.

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<sup>13</sup> <http://www.epa.gov/ttnatw01/hlthef/methanol.html>, June 16, 2015

<sup>14</sup> <http://www.cdc.gov/niosh/ipcsneng/neng1588.html>, June 16, 2015

<sup>15</sup> <http://npic.orst.edu/factsheets/borictech.html>, April 25, 2014.

<sup>16</sup> <http://www.epa.gov/ttnatw01/hlthef/ethy-gly.html>, April 28, 2014

<sup>17</sup> <http://toxnet.nlm.nih.gov/cgi-bin/sis/search/a?dbs+hsdb:@term+@DOCNO+116>. April 28, 2014

**Table 2: Toxicity Levels of Chemicals in Drinking Water**

Toxicity Level	Concentrations at Which Toxicity Occurs (ppm)	Chemicals
HIGH	> 0.001	Ethylene glycol
MEDIUM	> 0.01	Isopropyl alcohol, methanol
LOW	> 0.1	Potassium carbonate, boric acid

*These numbers are fictionalized for the simulation and are not based upon actual levels.*

To ensure a common baseline of understanding for the negotiation, the Governor’s Office helped the Charles County health department pay for testing of water samples collected pre-drilling that could provide a baseline for drinking water quality on sites within 1000 feet of a drilling pad, such as the school (Table 3). *A follow-up test of the same well has been ordered post-drilling but those results have not been obtained prior to the start of negotiations.*

**Table 3: Baseline Groundwater Chemical Testing of School Well (January 5)**

Chemical Name	Toxicity Level	Concentration (ppm)
Ethylene Glycol	HIGH	0
Methanol	MEDIUM	0
Isopropyl Alcohol	MEDIUM	0
Boric Acid	LOW	0.001*
Potassium Carbonate	LOW	0

*\*Found in fertilizer, laundry detergents, and other household products*

**2. Who should monitor the use, storage, and treatment of slick water and slick water flowback?**

When it comes to full lifecycle management of slick water, there are three policy options that Virginia is legally allowed to use:

- a) First, the state could implement self-monitoring, where the drilling companies must provide certain data to the state from their slick water processes in order to be in compliance.
- b) Second, state agency (DMME or DEQ) staff could monitor drill sites, which would require increased resource capacity and technical expertise at the state level.
- c) Third, the government could pay for a third-party contractor to monitor slick water compliance. Monitoring visits by any of these parties would yield the same data, and all monitoring visits are the same.

Who pays and how much is paid for monitoring depends upon who is responsible (Table 4.)

**Table 4: Relative Costs of Monitoring by Frequency of Monitoring and Monitoring Types**

	Quarterly	Monthly	Daily
<b>Self-Monitoring</b> (paid for by industry)	60%	70%	80%
<b>Third Party Contractor</b> (paid for by DMME/industry)	80%	100%*	180%
<b>State Monitoring</b> (paid for by State)	100%*	125%	200%

\* The baseline cost estimate is a third party contractor monitoring slick water management on a monthly basis **OR** the DMME monitoring wells quarterly.

### 3. How frequently should monitoring occur?

Another question centers upon the frequency of monitoring: daily, monthly, or quarterly. Monitoring is the act of noting and measuring slick water flowback, including the treatment process, storage, and measurement of flowback escaping into the environment. *If a drilling operation is found to be out of compliance along any monitored parameter, the company must cease operations at all well sites they are operating until the noncompliant well meets regulatory requirements.*

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## Suggested Ground Rules for Negotiated Rule Making

1. An issue is not considered resolved unless the relevant stakeholders are all in agreement. However, due to strong interest from the governor to produce results, the facilitators have the discretion to encourage the panel to move on to a new issue if time should become a factor. **Note that the panel must address all three issues by the end of the process.** In addition, the facilitators have discretion to limit the scope of the discussion or debate if issues arise which are beyond the scope of the process or involve issues that would require information not currently available.
2. Should the group not achieve consensus on the three issues, the DMME will issue the rules themselves. It should be noted that when it comes to the issue of chemical disclosure, the DMME does have the authority to make regulations requiring disclosure of chemicals. ChemPlus, however, could then take DMME to court to challenge disclosure rules. However, drilling operations must be halted until the lawsuit is settled.
3. In order to encourage spontaneous and open involvement, panel participants are allowed to speak at any time so long as another representative is not currently talking.

4. Each participant is allowed to call up to three 'caucuses' where the negotiation will suspend for three minutes so that representatives can privately discuss ideas with their own teams or with other negotiation participants in privacy.
5. A formal agreement occurs when the precise agreement is written or typed and all present stakeholder parties sign the agreement.

### **Brief Introduction of Stakeholders**

Individuals attending the negotiation on behalf of their organization or agency are as follows:

Luis Eggleston – Farmer and long-time resident of Windsor who is a representative of Homesteads, a landowning association promoting economic development. He has signed a contract to allow fracking on his land and is earning a solid income as a result.

Laurie Abel – Founder of Mothers Asking About Drilling in Our Neighborhood (MAADON). Laurie has been involved in the issue after she raised concerns that children in the community had become sick shortly after fracking began near the school.

Jackson Raines – Member of Eco-Virginia who became involved in the fracking debate after working on banning the practice in the nearby National Forest. Jackson is not from Windsor and has been invited to represent Virginia-based environmental advocacy groups.

Shanna Kao – Representative of the DMME who has been involved in the regulatory process of hydrofracking in Virginia since the beginning. Shanna is not a Windsor resident.

Alex Chinnington – Charles County Executive, known for a strong desire for local autonomy from state influence. Alex was born and raised in Windsor and has expressed interest in protecting local citizens from any entity, public or private, violating property rights.

Taylor Petersen – Vice President of Sales for ChemPlus, a chemical manufacturer that provides slick water to Donnelly Brothers Drilling for natural gas extraction. Taylor is from Louisiana and has been in slick water manufacturing for a long time. It is unclear to Taylor why the public needs to know the composition of chemicals in what is perceived as a safe practice.

Oakley Faldowski – Director of Government Affairs of Donnelly Brothers Drilling, the oil drilling firm. Oakley was sent here from Pennsylvania where the Government Affairs office was very successful in protecting the chemical rights of business entities involved in the fracking process.

Julli Williams: Representative from the Governor's Office sent to oversee the process and speak on behalf of the Governor. Julli has been sent to protect the interests of the Governor and strongly encourage all parties to achieve consensus.

**What follows are confidential role sheets. It is very important that the information in these role sheets not be shared with other participants.**

# Confidential

## **Alex Chinnington, Charles County Executive**

In your opinion, the state has not been on the ball regarding the emerging hydrofracking industry and it's time for local governments to take control. As you face reelection this coming fall, you need to show that you have the best interests of Charles County citizens in mind. The economic development implications of a potential natural gas boom is huge, but as a fourth generation resident, you are not willing to fully trade the bucolic nature of farms and valleys just for a quick dollar unless it is truly the will of the people. As such, you intend to listen closely to those at the table who represent local interests to inform your positions. However, you staunchly believe in private property rights – both in the right to do what one wants with property, but also in the need to protect uneducated land owners from outside corporations taking full advantage to a fault.

**Issue #1 - Chemical Disclosure.** *Position: Moderate and high toxicity chemicals should be disclosed.*

While not an environmentalist by any means, you believe that disclosure is a low cost way to ensure private property is not unduly damaged. At the same time, you feel that requiring disclosure of all chemicals places too much burden on gas companies. Yet, your primary interest is in pleasing the public and in generating political capital if seen as a 'protector of the people' regarding water quality as well as potential cleanup costs requiring public dollars.

**Issues #2 and #3 - Monitoring Authority and Frequency.** *Position: A neutral, third party should monitor the slickwater process from cradle to grave on monthly basis.*

You don't believe the DMME would do an adequate job monitoring because you believe that they do not have the staff, the funding, or the time to ensure compliance. You also believe in as much local influence as possible, despite the fact that Virginia is a Dillon Rule state, limiting actual local government authority.

However, you are even more strongly against industry self-reporting. You feel that the industry lacks the proper incentives to monitor with the best interests of the community in mind. While they may be conscious about pleasing the specific landowner, problems impacting the broader community may not be of concern. Yet, you want to recognize the economic benefits of the gas industry by advocating for less than daily monitoring. Having to sample and test every day would cost too much money and slow the process.

### **Additional Issues**

While not on the formal agenda, you are very aware that, under current Virginia law, counties have the legal authority to leverage a 3% severance tax on hydraulic fracturing activity. Should it look like the negotiation is headed towards industry self-monitoring or something less than full disclosure of all chemical ingredients, you are willing to put the tax on the table to create a

fund for addressing surface spills that impact community waters. However, you are not readily willing to create the tax due to the strong conservative voter base in the County – such a move would be politically risky!

Also, you are aware that the Charles County health department ordered a follow-up water quality test of the well located next to the school. You had hoped that this data would be available at this point so that negotiations may proceed with as much information as possible on the table.

# Confidential

## Taylor Petersen, VP of Sales for ChemPlus

As a chemical expert, a gas field expert, and now VP of Sales for ChemPlus, you have worked your way from the bottom of the company to the top through hard work and dedication. You moved away from your family and your friends in order to build the market in Virginia and your future resides in the protection of the chemical composition of slickwater which has taken many painstaking years in the lab to develop. Because ChemPlus has developed the most efficient recipe for slickwater, they are now at the top of the industry; if chemical disclosure is required by law, you will lose your competitive advantage within the industry and you will likely lose your job here in Virginia.

**Issue #1 - Chemical Disclosure.** *Position: No chemical information should be on disclosure lists.*

Because ChemPlus' slickwater recipe is patented under federal law, you strongly believe that the Uniform Trade Secrets Act (UTSA) protects trade secrets for companies that operate across state boundaries. According to the law, a "trade secret" includes information about a formula that derives economic value for the industry that knows it. Therefore, if the DMME creates regulations requiring chemical disclosure, ChemPlus believes that it can sue under UTSA. However, drilling operations by Donnelly Brothers will have to be halted while this decision is made, meaning a loss of income for Donnelly Brothers as well as a loss of income for ChemPlus.

If chemical disclosure is required, public pressure will likely force ChemPlus to change its slick water recipe to replace chemicals with known toxicities. This is expensive (see below). However, if someone subsidizes these substitutions or if the drilling companies are willing to pay the higher price, you would not care as much about the added expense.

Chemical Name	Toxicity Level	Use	Current Cost (per 1000 gallons)	Substitution Cost (per 1000 gallons)
Ethylene glycol	HIGH	Product stabilizer and/or winterizing agent	\$0.60	\$0.85
Methanol	MEDIUM	Product stabilizer and/or winterizing agent	\$0.40	\$0.55
Boric acid	LOW	Maintains fluid viscosity as temperature increases	\$0.90	\$1.00
Potassium carbonate	LOW	Adjusts pH to maintain overall effectiveness	\$0.70	\$0.75



**Issues #2 and #3 - Monitoring Authority and Frequency.** *Position: The drilling industry should self-report quarterly.*

It is a considerable waste of government resources, time, and energy for officials to come monitor the entire slickwater process from cradle to grave. Both Donnelly Brothers Drilling and ChemPlus utilize industry-based best practices to ensure the proper treatment of the slickwater and they do not need regulators watching their every move. This will surely create more unnecessary tension between the government and the industry.

More specifically, you do not want the state of Virginia to monitor your product. With ChemPlus expanding into new regions, success in Virginia is vital to success. A neutral third party in charge of monitoring threatens potential competitive advantage by slowing the process.

# Confidential

## **Oakley Faldowski, Donnelly Brothers Drilling Director of Government Affairs**

New on the scene in Virginia but familiar with the rural desperation of gas-rich counties in Pennsylvania, you know the economic disparity facing Charles County. They need you and you need to make sure they know that and to make sure that the governance rules developed by this negotiation favor the gas industry. As an expert in government affairs, you know just how to approach this situation especially in a Dillon rule state: stymie local control, silence interest groups, and avoid rules about disclosing chemical lists to the general public.

**Issue #1 - Chemical Disclosure.** *Position: No chemical information should be on disclosure lists.*

The efficiency of your fracking operations depend on the specific recipe of chemicals in the slickwater mixture provided by ChemPlus. The reality of the situation is that the sooner the public knows what's in the slickwater, the sooner those chemicals could be banned, requiring more expensive and less effective substitutes (see table). While it is true that the leases signed with Charles County residents have a clause that allow royalties paid to landowners to be adjusted down should new regulations incur additional costs, you see that invoking this clause carries high political risks and you would therefore be hesitant to use it.

Chemical Name	Toxicity Level	Use	Cost (per 1000 gallons)	Substitution Cost (per 1000 gallons)
Ethylene glycol	HIGH	Product stabilizer and/or winterizing agent	\$0.60	\$0.85
Methanol	MEDIUM	Product stabilizer and/or winterizing agent	\$0.40	\$0.55
Boric acid	LOW	Maintains fluid viscosity as temperature increases	\$0.90	\$1.00
Potassium carbonate	LOW	Adjusts pH to maintain overall effectiveness	\$0.70	\$0.75

Based upon disclosures by ChemPlus engineers, you are aware that there are chemicals in the slickwater that are harmful to both human health and the environment, but as long as the public does not know what these chemicals are and that your operations are 100% efficient, things can be business as usual.

Should required disclosure be on the table, you have been made aware that ChemPlus could try to stop the disclosure by suing the DMME under the Uniform Trade Secrets Act (UTSA). However, this process would take months and would halt drilling operations by Donnelly Brothers until the decision is made.

**Issues #2 and #3 - Monitoring Authority and Frequency.** *Position: The drilling industry should self-report quarterly.*

Key to the success of fracking operations in Pennsylvania was the ability of drilling companies to self-report site-specific slickwater activity as infrequently as possible. You want to repeat this in Virginia. If the state controls the monitoring process, compliance frequency will likely increase substantially, and if a third party gains control, they will definitely be more concerned about the environmental and human health impacts over the economic efficiency of operations. Despite the best efforts of your drill pad crews, small spills are just going to happen! It is more important to get the gas flowing quickly. The costs of self-monitoring are not large and would merely be passed on to the consumer.

However, should self-monitoring be off the table, you are not opposed to the state being the monitoring authority if the monitoring agency is the DMME. Due to ongoing budget restraints and a solid Republican majority in the House of Delegates, DMME does not have the personnel or resources to monitor at the levels they might desire. This will only become more difficult for them as fracking activity expands. It is possible, however, that the state may leverage a severance tax to pay for expanded monitoring. To counter this, you have permission to approach the Governor's representative with a campaign donation to encourage the Governor to limit what the severance tax could be used for, out of interests for maintaining the rate of economic development that the gas industry is providing. It does not hurt that your sister knows the Governor's representative personally and that they are friends. However, you are aware that the Governor is putting a good deal of political will into the success of this negotiated rulemaking and that any amount of campaign donation would not compensate for the loss of the Governor's ear should you completely derail the process and walk away.

You do not want the DEQ to be the monitoring agency because they are an unknown entity. Donnelly has developed and continues to maintain good relationships with DMME officials, particularly Kao.

Worst case scenario, a third party monitoring organization would oversee the slickwater process; they would surely have the resources and capacity to monitor frequently and thoroughly, which would not be in your best interest economically. This would be detrimental to the business, as any violations require a ceasing of all operations until the cited well returns to compliant levels.

## CONFIDENTIAL

### ***Laurie Abel, Mothers Asking About Drilling in Our Neighborhoods (MAADON)***

You have been a resident of Windsor ever since you moved to the community shortly before the birth of Maria. Although this means your roots do not extend as deeply as Luis Eggleston's, you have quickly assimilated into the community and value the strong bonds between neighbors as well as the healthy lifestyle for your kids. While your spouse has a comfortable job in Windsor, you empathize with your neighbors who have been struggling to make ends meet. Nevertheless, your first priority is the health and safety of the children in the community and, to a lesser extent, the beautiful farms, streams, and forests that exist in Charles County.

Due to your research into the fracking industry, you view the individuals that have come to Charles County for fracking with suspicion. You are not convinced that they have the best interests of the community in mind and believe that they are more interested in cutting corners for cost efficiency rather than for zeroing out contamination risks.

You believe strongly that the primary way to ensure compliance and safety is through this negotiated rulemaking process. Should the negotiations fail and the DMME be in charge of making the rule, you are convinced that the drilling companies, through campaign donations, would be able to heavily influence the final rule. However, you are not against invoking the image of sick children to the media during the negotiated rulemaking process to publicize any negative stories about the industry in an effort to sway public opinion in favor of tighter regulation – even though you are not fully convinced that the recent flu-like disease is linked, particularly given the clean bill of health of the well tested by the school.

**Issue #1 - Chemical Disclosure.** *Position: All information about chemicals should be on disclosure lists.\*\**

You strongly believe in the protection of the local community, specifically children, so you would like to know all chemicals involved. \*\*However, your research revealed the likelihood that the chemicals common to slickwater with low toxicities do not seem to be used in such quantity to have significant impacts on public and ecological health. Therefore, if need be, you are willing to allow low toxicity chemicals to be exempt.

**Issues #2 and #3 - Monitoring Authority and Frequency.** *Position: Monitoring should occur through a third party on a daily basis.*

MAADON is not as concerned about who monitors so much as how frequent the monitoring should be. If pushed to declare a position, you prefer third party operators to the state as you have heard that the DMME is understaffed and underfunded. Also, you are unsure as to why the Department of Environmental Quality (DEQ) is not at the table as they would be your logical choice for a state agency to be monitoring water quality challenges, if it must be a state agency. The DMME potentially has a conflict of interest compared to the DEQ.

What is less negotiable is the frequency of monitoring. While less frequent monitoring may capture underground issues with groundwater plumes, surface spills can happen on any given day. A daily presence of some sort of monitoring is the best way to keep drilling activities at their highest efficiency and effectiveness.

### **Additional Issues**

While not on the formal agenda for the negotiated rulemaking, your research indicated that the County has the option of invoking a 3% severance tax on fracking activities. You are interested in this only in that you see it as a way to influence those generating economic benefit from fracking by taking away part of their profits.

Also, MAADON is aware that the Charles County health department ordered a follow-up water quality test of the well located next to the school. You are anxious to know the results of this test as it will either confirm or refute your suspicion that there may be a link between the wells and potential health effects.

# CONFIDENTIAL

## *Jackson Raines, EcoVirginia Representative*

You are a relatively new employee of EcoVirginia who made a splash protecting the nearby National Forest from the ravages of hydrofracking. Through that campaign, you strongly believe in the power of the media to shape public opinion, particularly when it pertains to the ecological health of the state. You are very concerned with the lack of transparency regarding the chemicals involved in fracking and believe that much can be achieved if that information is available. You see this opportunity as a battle and not just a local battle, but part of a national campaign to resist the growing influence and acceptance of fracking as a way to secure energy.

It is important to note that you do not live in Charles County and that you do not fully understand and, to some extent, agree with the social and economic concerns currently held by residents of Windsor. As such, you are interested in trying to build relationships with any local resident who seems to agree with you on the issues to convince them of the fundamental importance of ecological quality as the basis for social and economic activity.

**Issue #1 - Chemical Disclosure.** *Position: All chemical information should be on disclosure lists.*

EcoVirginia's strict concern for ecological health causes your position on this issue to be hard and fast – without the policy tool of information disclosure, you are unable to sway public opinion to protect the water and forests of Virginia. This is the core mission of the organization and your job! You are willing to use the Freedom of Information Act to try to force disclosure.

**Issues #2 and #3 - Monitoring Authority and Frequency.** *Position: DEQ should be in charge of monitoring and should monitor daily.*

EcoVirginia desires the maximum possible level of scrutiny on fracturing companies and are strongly opposed to self-monitoring due to the conflicting incentives for efficiency over effectiveness. However, you are unsure that DMME is the right agency for regulating the environmental impacts of the gas industry due to a conflict of interests in their mission (*to enhance the development and conservation of energy and mineral resources in a safe and environmentally sound manner to support a more productive economy*). Instead, you would like to see the Department of Environmental Quality be in charge of monitoring. If that is not an option, you prefer DMME. You view third party monitoring with skepticism because they are just another corporation. At least DMME is subject to political will and public scrutiny.

### **Additional Issues**

While not on the formal agenda, you also are very interested in seeing the county put in place a severance tax so that money can be gathered from any fracking activity and put into a local fund to pay for eco-emergencies that may arise, especially if you are not getting the regulatory requirements you desire.

# CONFIDENTIAL

## *Luis Eggleston, Farmer and Chair of Homesteads*

The Eggleston family has lived in Charles County ever since the late 1700s, making the family one of the original settlers in the area – a point that you always enjoy making whenever you can. However, with the shifting economies over the decades, the family farm is not as productive or lucrative as it used to be. You have managed to run the farm for the past two decades, but it has been a struggle since the local economic crash of the 1990s and then the national recession of the past few years.

Just when it appeared that you might need to consider selling off parcels of the land that has been in the family for 250 years, Donnelly Brothers approached you with a lease agreement that essentially solved all of your financial problems. Your land was one of the first to be drilled and ‘fracked’ in the County, but the bottom parcel the company chose near the school was, in your mind, the least desirable portion of the property. You can’t even see the drill pad from the main house, much less hear it now that the frack has been completed. All you see is the monthly check that allows you and your family to live a comfortable lifestyle, even scheduling a vacation or two, not to ignore the ability to save some money for college for the kids.

Because of this boon, you have recently founded a landowner’s association, Homesteads, consisting of individuals interested in economic development of the community through natural gas extraction. Most of your members have signed leases to allow fracking on their land and are very interested in seeing sites be developed so that money can start flowing.

Despite your support of this economic boom, you do find yourself conflicted and so joined the rulemaking process with some hesitation. Your historic connection to the community and your passionate belief in property rights rubs a little against your public face as a champion of fracking and the income it brings. While you believe that landowners should be able to do whatever they want on their properties, a small part of you feels that corporations do not respect this value equally and could violate the historical ties of the landowner to their land.

However, you and Homestead are also concerned about too much involvement from government and are hesitant of any arrangement that may pave the way for greater government intervention. You are quite aware that increased regulation will, at some point, likely mean decreased royalties for landowners. You seem to remember a clause in your own lease that might allow the drilling company to change the royalty rates . . .

**Issue #1 - Chemical Disclosure.** *Position: No chemical information should be disclosed.\*\**

You do not want to alienate the drilling companies from wanting to do business in Virginia, particularly given the dire straits in which the Charles County economy finds itself. \*\*However, being a parent yourself, you are sympathetic to concerns about health and safety. Therefore, if need be, you are open to requiring that highly toxic chemicals be disclosed.

**Issues #2 and #3 - Monitoring Authority and Frequency.** *Position: The industry should self-monitor quarterly.*

Your (and Homesteads') desire for economic development motivates you to be concerned about an arrangement that would eat into individual profits, therefore supporting your stance that the industry is fully capable of monitoring and should only have to report out once a quarter. Also, you and your Homestead group have a healthy mistrust for government intervention, so keeping state workers off of your land is extremely important. Don't tread on me!



## CONFIDENTIAL

### **Shanna Kao, Division of Mines, Minerals, and Energy (DMME)**

You are a longtime employee of DMME who has been part of the fracking conversation in Virginia since the beginning. Despite your role as a servant to the public, you see this negotiation as a chance to ensure DMME is at the head of any monitoring or compliance of the hydrofracking industry. Relinquishing this control to industry, third party operators, or even the Department of Environmental Quality (DEQ) weakens DMME's argument for increased resources and staffing to fulfill its mission (*It is the mission of the DMME to enhance the development and conservation of energy and mineral resources in a safe and environmentally sound manner to support a more productive economy*). However, you are sensitive to the opinions and ideas of the Governor and his representatives and need to make sure that your stances are in line with his interests. His office, of course, proposes the budgets.

Also, you see the issues on the table as being technocratic and that they can be solved through the right regulations. While economic concerns are important to you, you are less concerned with the needs of individuals benefiting from hydrofracking than with balancing state-level environmental and economic interests. This means that you will prioritize the safe development of natural gas resources over the individual profits of local landowners. You feel that the DEQ is unable to maintain this balance of interests.

Finally, you are well aware that if the negotiated rulemaking process fails to find consensus, the state will determine the regulations through their regular rulemaking process. While there are advantages to this, the likelihood that both industry and activist lawsuits will occur is very high, particularly given the emotion and controversy behind these issues. In this sense, you and the DMME are very much in step with the Governor – make sure an agreement is reached.

**Issue #1 - Chemical Disclosure.** *Position: Only moderately and highly toxic chemicals disclosed confidentially to the DMME.*

The DMME's current role as the state regulatory agency responsible for developing AND monitoring mining extraction means that you have to strike a balance between economy and environment and avoid alienating hydrofracking businesses. You have therefore considered a compromise position of allowing certain chemicals to be disclosed to the DMME, but not to the general public. Instead, you propose that DMME only release whether or not chemicals of different levels of toxicity are being used and not the names of those particular chemicals. You are confident that you can convince the Governor to allow this information to be exempt from Freedom of Information Act rules.

**Issues #2 and #3 - Monitoring Authority and Frequency.** *Position: The DMME should monitor monthly.*

The task of monitoring would require an increase in agency funds, so advocating that DMME be in charge of monitoring is a no-brainer. The only way that this would be a liability is if the

Governor indicates that he is not willing to increase DMME's budget. In addition, DMME has experience with all other mineral and underground resource extractions, giving them a technical expertise advantage over other agencies. You are against third party monitoring, as it means that DMME would lose out on financial resources and then be in charge of the contracts with these third parties - essentially monitoring the monitors.

As to monitoring frequency, you are realistic regarding the desires of the natural gas industry as well as the expense of daily monitoring. Therefore, you advocate for monthly monitoring. This is in line with what occurs in other extraction processes and enhances opportunities for economic development.

### **Additional Issues**

You are aware that Charles County may invoke the 3% severance tax law to generate funds. If the tax is brought up, you are interested in finding ways for the tax to pay for part of monitoring efforts, whether it is the DMME or a third party monitoring company that DMME has to manage via contract. Since full numbers are not available, all you would want to see is verbal commitment from the County to share those revenues.

Finally, you maintain a close relationship with Donnelly Brothers and their employees, having worked with them for many years in various aspects of their mining and drilling operations. While you practice ethical management in your DMME responsibilities, you have found it easy to reach agreements with Donnelly when discussing regulatory issues outside of formal meetings and are inclined to continue that relationship by helping them get what they want.

## CONFIDENTIAL

### *Julli Williams, Governor's Office Representative*

Being the Governor's point person for statewide economic development as well as having grown up in rural southwest Virginia, you have been sent to the rulemaking process to represent the Governor's interests.

As is publicly known, the Governor very much wants to see this process succeed both as a political plus for his record, but also to signal to other industries that Virginia is a fair and transparent place to conduct business that knows how to effectively work with potentially opposing interests. He has made it very clear that, with this particular industry, he wants to demonstrate that Virginians can compromise and support one another to allow for 'smart' development of natural gas resources.

Privately, the Governor has expressed concern to you that the hydrofracking process may not fit with the culture and environment of Virginia. He has shared with you that he has a not-so-public interest in ensuring long-term sustainability of Virginia natural resources and environmental quality, though he would never use those terms due to conservative backlash. He prides himself on actually being able to work with both political parties in Richmond. He is hoping that with your credibility as a native to the region around Charles County, you will be able to relate to both local as well as industry interests.

Unbeknownst to anyone at the table, the Governor is willing to subsidize some of the costs associated with chemical ingredient disclosure. He anticipates that, if disclosure is to happen, he will need to incentivize the hydrofracking industry to substitute problem chemicals with more expensive but less toxic ones. Therefore, these subsidies could be given to either the companies or the individual landowners to make up the difference. ***However, these subsidies would only make up for about 50% of the costs and offering them is only an option if it negotiations are in the last minute and look likely to fail.*** The Governor is adamant about this last point.

**Issue #1 - Chemical Disclosure.** *Position: None.\*\**

**Issues #2 and #3 - Monitoring Authority and Frequency.** *Position: None.\*\**

Due to your primary interest in seeing consensus be reached, you have no public position regarding any of the three issues on the table. **\*\*However, you are not willing to see solutions that only fulfill one set of interests, particularly those of the hydrofracking industry, and will intervene as you see necessary.**

You have been instructed, though, that the Governor is willing to increase DMME's budget should DMME be in charge of monitoring, but only if the monitoring is to be quarterly. Anything more frequent would have to be diverted from other parts of the DMME budget. The Governor is not interested in involving the DEQ unless it is in response to a major spill.

# CONFIDENTIAL

## Resolve Facilitators

Your task is to facilitate the negotiated rulemaking process for the assembled stakeholders. As a contractor hired by the Governor's office, you are provided with a discreet set of issues (summarized below) that need to be addressed. However, as an experienced facilitator, you know that additional issues and emergent solutions will occur so you must prepare yourself to be able to help the group move through the process.

First and foremost, you will have in front of you at all times the golden rule of being a facilitative neutral:

**It is a violation of your role to participate in problem solving.**

Therefore, your actions are limited to the following:

- Timekeeping so that participants are aware of time constraints as well as when breaks and caucuses begin and end;
- Note taking on the wall so that participants may all see record of proposals and conversations;
- Asking clarifying questions so that notes taken accurately represent the intentions of those who made the proposal or opinion you are trying to capture; and,
- Writing out any final proposals in detail for participants to formally sign on.

### Process

When you convene the meeting, utilize the following process.

- a) Welcome on behalf of the Governor.
- b) Read through and ask for agreement to **ground rules** (see below).
- c) Brief introductions of all at the table (Name, Organization).
- d) Read out loud the three **issue questions** (see below).
- e) Open the floor for anyone to begin sharing interests or proposals.
- f) Call breaks or allow for caucuses as scheduled or needed.

### Ground Rules (see Background Information, too)

1. The negotiation is designed to encourage spontaneous and open involvement, thus panel participants are allowed to speak at any time, so long as another representative is not currently talking. If needed, the facilitator will 'stack' or identify an order in which those wishing to speak will do so.
2. Each participant is allowed to call up to three 'caucuses' during the entire process where the negotiation will suspend for three minutes so that representatives can privately discuss ideas with their own teams or with other negotiation participants in privacy. Facilitators will be the timekeepers for these caucuses.

3. Negotiation will occur in twenty minute chunks with a three minute break between. Breaks may be used for continuing discussion between participants. Facilitators will inform the group as to the start and stop of these breaks.
4. A formal agreement occurs when the precise agreement is written up or typed out by the facilitators and all present stakeholder parties sign the agreement.
5. Participants are encouraged to speak only for their own interests and positions and to be respectful of other individuals in the negotiation.

### **Issues**

1. **Chemical Disclosure:** What chemicals utilized in slick water should be disclosed to the public?
2. **Monitoring Compliance:** Who should monitor the use, storage, and treatment of slick water and slick water flowback?
3. **Monitoring Frequency:** How frequently should monitoring occur?

# Negotiation Preparation Sheet

To prepare for the negotiation, complete the following worksheet.

1. What are your positions and interests regarding the following issues? Rank the issues in order of importance to you.

Issue	Rank	Positions	Interests
<b>Chemical Disclosure:</b> What chemicals utilized in slick water should be disclosed to the public?			
<b>Monitoring Compliance:</b> Who should monitor the use, storage, and treatment of slick water and slick water flowback?			
<b>Monitoring Frequency:</b> How frequently should monitoring occur?			

2. Based upon the Background Information, who are potential allies and potential opponents? What do you think their interests are? Circle interests that line up with your own.

Issue	Potential Allies	Interests	Potential Opponents	Interests
<b>Chemical Disclosure</b>				
<b>Monitoring Compliance</b>				
<b>Monitoring Frequency</b>				

3. What other issues or interests outside these formal issues do you have?

4. Utilizing the information above, outline your initial approach and negotiating strategy below.