

FISCAL NOTE
Requested by Legislative Council
04/12/2019

Amendment to: Engrossed SB 2249

- 1 A. **State fiscal effect:** *Identify the state fiscal effect and the fiscal effect on agency appropriations compared to funding levels and appropriations anticipated under current law.*

	2017-2019 Biennium		2019-2021 Biennium		2021-2023 Biennium	
	General Fund	Other Funds	General Fund	Other Funds	General Fund	Other Funds
Revenues						
Expenditures				\$5,000,000		
Appropriations				\$5,000,000		

- 1 B. **County, city, school district and township fiscal effect:** *Identify the fiscal effect on the appropriate political subdivision.*

	2017-2019 Biennium	2019-2021 Biennium	2021-2023 Biennium
Counties			
Cities			
School Districts			
Townships			

- 2 A. **Bill and fiscal impact summary:** *Provide a brief summary of the measure, including description of the provisions having fiscal impact (limited to 300 characters).*

Engrossed Senate Bill 2249 creates the state energy research center, defines the purpose and duties of the center, and creates NDCC 57-51.1-07.9 to allocate up to \$5M per biennium to the state energy research center fund from the state share of oil & gas revenues.

- B. **Fiscal impact sections:** *Identify and provide a brief description of the sections of the measure which have fiscal impact. Include any assumptions and comments relevant to the analysis.*

Section 2 of Engrossed SB 2249 creates NDCC 57-51.1-07.9 by adding the state energy research center fund as a special fund and requiring monthly deposits into the fund of 1% of the state general fund share portion of oil and gas gross production tax and oil extraction tax revenues. With a biennial cap of \$5M.

Based on the Legislative estimates for oil and gas tax revenues for the 2019-2021 biennium, this allocation of \$5M to the state energy research center fund would ultimately reduce the allocations made to the strategic investment and improvements fund (SIIF) by this same \$5M.

3. **State fiscal effect detail:** *For information shown under state fiscal effect in 1A, please:*

- A. **Revenues:** *Explain the revenue amounts. Provide detail, when appropriate, for each revenue type and fund affected and any amounts included in the executive budget.*

Engrossed Senate Bill 2249 will increase special fund revenues for the state energy research center fund by \$5M and reduce special fund revenues for SIIF by the same.

- B. **Expenditures:** *Explain the expenditure amounts. Provide detail, when appropriate, for each agency, line item, and fund affected and the number of FTE positions affected.*

Section 2 of the bill authorizes the state energy research center to expend the money deposited in the state energy research center fund in accordance with NDCC 15-11-40 as created in section 1 of the bill.

- C. **Appropriations:** *Explain the appropriation amounts. Provide detail, when appropriate, for each agency and fund affected. Explain the relationship between the amounts shown for expenditures and appropriations. Indicate whether the appropriation or a part of the appropriation is included in the executive budget or relates to a continuing appropriation.*

Section 2 of Engrossed SB 2249 appropriates all money deposited into the state energy research center fund to the state energy research center to be used in accordance with the section of century code defined in section 1 of the bill. As stated above, this is estimated to be \$5M for the '19-'21 biennium.

Name: Ryan Skor

Agency: Office of State Treasurer

Telephone: (701)328-2643

Date Prepared: 04/12/2019

FISCAL NOTE
Requested by Legislative Council
02/06/2019

Amendment to: SB 2249

- 1 A. **State fiscal effect:** *Identify the state fiscal effect and the fiscal effect on agency appropriations compared to funding levels and appropriations anticipated under current law.*

	2017-2019 Biennium		2019-2021 Biennium		2021-2023 Biennium	
	General Fund	Other Funds	General Fund	Other Funds	General Fund	Other Funds
Revenues						
Expenditures				\$6,000,000		
Appropriations				\$6,000,000		

- 1 B. **County, city, school district and township fiscal effect:** *Identify the fiscal effect on the appropriate political subdivision.*

	2017-2019 Biennium	2019-2021 Biennium	2021-2023 Biennium
Counties			
Cities			
School Districts			
Townships			

- 2 A. **Bill and fiscal impact summary:** *Provide a brief summary of the measure, including description of the provisions having fiscal impact (limited to 300 characters).*

Engrossed Senate Bill 2249 creates the state energy research center, defines the purpose and duties of the center, and creates NDCC 57-51.1-07.9 to allocate \$6M per biennium to the center from the state share of oil & gas revenues.

- B. **Fiscal impact sections:** *Identify and provide a brief description of the sections of the measure which have fiscal impact. Include any assumptions and comments relevant to the analysis.*

Section 2 of Engrossed SB 2249 creates NDCC 57-51.1-07.9 by adding the state energy research center fund as a special fund and requiring monthly deposits into the fund of 2% of oil and gas gross production tax and oil extraction tax revenues prior to depositing in the remaining state general fund share buckets. With a biennial cap of \$6M.

Based on the Legislative estimates for oil and gas tax revenues for the 2019-2021 biennium, this allocation of \$6M to the state energy research center fund would ultimately reduce the allocations made to the strategic investment and improvements fund (SIIF) by this same \$6M.

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Name: Ryan Skor

Agency: Office of State Treasurer

Telephone: (701)328-2643

Date Prepared: 02/07/2019

FISCAL NOTE
Requested by Legislative Council
01/14/2019

Bill/Resolution No.: SB 2249

- 1 A. **State fiscal effect:** *Identify the state fiscal effect and the fiscal effect on agency appropriations compared to funding levels and appropriations anticipated under current law.*

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	General Fund	Other Funds	General Fund	Other Funds	General Fund	Other Funds
Revenues						
Expenditures				\$6,000,000		
Appropriations				\$6,000,000		

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Cities			
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Townships			

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Section 2 of the bill authorizes the state energy research center to expend the money deposited in the state energy research center fund in accordance with NDCC 15-11-40 as created in section 1 of the bill.

- C. **Appropriations:** *Explain the appropriation amounts. Provide detail, when appropriate, for each agency and fund affected. Explain the relationship between the amounts shown for expenditures and appropriations. Indicate whether the appropriation or a part of the appropriation is included in the executive budget or relates to a continuing appropriation.*

Section 2 of SB 2249 appropriates all money deposited into the state energy research center fund to the state energy research center to be used in accordance with the section of century code defined in section 1 of the bill. As stated above, this is estimated to be \$6M for the '19-'21 biennium.

Name: Ryan Skor

Agency: Office of State Treasurer

Telephone: (701)328-2643

Date Prepared: 01/16/2019

2019 SENATE APPROPRIATIONS

SB 2249

2019 SENATE STANDING COMMITTEE MINUTES

Appropriations Committee Harvest Room, State Capitol

SB 2249
1/31/2019
Job # 31859

- ☐ Subcommittee
☐ Conference Committee

Committee Clerk Signature Rose Laning / Florence Mayer
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Explanation or reason for introduction of bill/resolution:

A BILL for an Act to create and enact sections 15-11-40 and 57-51.1-07.9 of the North Dakota Century Code, relating to the state energy research center and the state energy research center fund; and to provide a continuing appropriation.

Minutes:

Testimony Attached # 1 – 7.

Legislative Council: Adam Mathiak
OMB: Becky Keller

Chairman Holmberg called the committee to order on SB 2249.

Chairman Holmberg: Quick introduction of the bill about the State Energy Resource Center. You will find that statewide support for such an initiative will be demonstrated today. District 1 will make some comments and then we will hear from others.

Senator Bekkedahl, District 1, Williston, ND:

Testimony Attached # 1.

Senator Rich Wardner, Senate Majority Leader, District 37, Dickinson, ND:

No written testimony. I support research in the state of ND and our two research universities. We can't fund as much as they would like or as we would like, but we need to put money into resources. Someone tested our ground and said there's oil down there. The issue is that this bill has the possibility of bringing some dollars forward.

Senator Mathern: Where does this rank in the university's request of \$100M and then the Governor's proposal of \$30M? Is it separate or together?

Senator Wardner: It is all together. We don't have the dollars to do the whole \$100M. We're still looking at the resources and funds coming in. The March revenue will show more. January was very conservative. This would be a part of it.

Senator Dever: I'm curious about money previously used for this purpose. Is this a replacement or increase?

Senator Wardner: It is an increase. We've had research dollars coming out of the Lignite Research fund at the EERC. This would increase it and put more in it.

(6:56) Thomas A. Erickson, CEO, UND Energy & Environmental Resource Center:

Testimony Attached # 2 – Testimony in favor.

Testimony Attached # 3 – North Dakota's Energy Future.

(17:23) Senator Sorvaag: There is a bill this afternoon, the presidents' research bill, that's supposed to be the idea to concept, not the commercialization. You're focused on energy; I don't see this as competition. Do you go all the way from idea to commercialization? There's a line in there.

Tom Erickson: I wear two hats. One is a grand champion for Energy and Environmental Studies. Within SB 2249 is totally focused on exploratory research, which stops when industry or someone is willing to fund it. It's just to get the first thing going. The EERC certainly takes technologies all the way to commercialization. We've had successful commercialization of a number of technologies. Probably the most important one is mercury control. It was born out of exploratory research. Today it's operating at 15 plants in North America including one plant in the State of North Dakota. That technology reduced the cost of mercury control to 1/25th of what it was originally. SB 2249 would strictly be the exploratory area. SB 2282 is largely capacity building for UND, as well as some co-funding on applied research activities, as well as some seed funding to help researchers establish a base to compete for funding. 2249 and 2282 are separate and distinct. The exploratory research is critical to what ends up as commercialization.

Senator Mathern: You've talked about return on investment. Does UND, EERC participate in that return and how? At NDSU, we have patents and there's a vehicle to capture some of that profit. What do you do?

Tom Erickson: We have an EERC Foundation which was set up in 1992 for the purpose of commercializing ideas and intellectual property out of the EERC. The inventors, according to ND state policy, are entitled to a minimum of 40% of royalties after expenses. It used to be 30%. The EERC Foundation is then able to help support other activities and research at the EERC to go forward. We do definitely benefit. The inventors benefit from it significantly and the EERC benefits from it.

(21:18) Senator Mathern: Does UND get any of the return on investment on the money spent on 2249?

Tom Erickson: Since we're part of UND, in essence, the university is getting the funding. There is no direct funding envisioned for UND through SB 2249, other than working with other researchers at UND. We're working with the business school on activities, with petroleum engineering on activities, etc. When we have a problem or idea where we need additional researchers, we would contract with university folks to help support that.

Senator Mathern: When you have a solution that goes to market and is worth money. Does any of the profit come back to UND?

Tom Erickson: It all goes to the EERC Foundation and then the Foundation invests in the EERC, which is UND. There is no direct payment to UND. We actually pay all the expenses and take all the risk associated with it. If we have an idea, to move it to market is a significant amount of time and a significant amount of expense. The UND proper does not invest in that. We use the EERC foundation to invest in that to be able to move it forward. That way we know we have the resources because in this day and age, a single patent over its life is \$100,000. The Foundation reinvests in the EERC specifically. There's no net profit that goes to Jed Shivers, the CFO for UND.

(23:55) Senator Sorvaag: This will establish a new bucket and will fill before anything else?

Becky Keller: It's from the first 2%, so yes. It wouldn't fall in the line of buckets, but would fill first.

Senator Sorvaag: So this would fill before the general fund? (That was confirmed.)

Ron Ness, President, North Dakota Petroleum Council:

No written testimony. Testified in support of SB 2249.

I'd like to answer Senator Mathern's question. How does the state or UND benefit? If you take the 300 great minds working at EERC and if they come up with a technology that just increases the productivity of a Bakken well by 1%, that's a billion barrels of oil. You can fill a lot of buckets with your tax revenue stream with a 1% increase. The reality is that type of research is only going to be with those discretionary funds like DOE used to provide, because typically companies that sponsor research have a very specific goal in mind and they're not doing broad based. Company research is always focused on a problem, not just a random opportunity. I also want to comment on my friend's from NDSU. There's so much opportunity for energy research in North Dakota. One of the things we've seen is the remediation of the salt water spills, the reclamation of soils. Those are opportunities in where, through the oil and gas research council, we've been engaging NDSU and the Industrial Commission has done some direct things. Having some discretionary funds provides some opportunities for the Industrial Commission or for the agency to do some things that aren't company focused that are maybe in the best wishes of the entire state of ND. This has been in the works since the federal government stopped funding fossil fuel research through the DOE. Prior to 2011, Senator Dorgan would always put the money back in the DOE budget for energy research. That ability went away and the agency has been stuck with his void of only doing company partnered research, and not having this broad scale research. That's what is before you today. I think it's very important.

Senator Mathern: Your example was positive, but we also heard in the sulfur area that there are 25 plants around the country benefitting from the research, with only 1 plant in ND. Are the other 25 benefitting ND in any way? If it's benefitting other states, how are you getting compensation?

Ron Ness: One of the examples is mercury controls which was really developed by the employees and is used worldwide. It's a grandiose scale of what EERC has done around the world. The Lignite industry is benefitting as a whole from what they've done. Those patent dollars have come back to the EERC Foundation and it's shared with the employees to further retain them. There is are indirect benefits, but those dollars always benefit ND in terms of

retaining the type of talent and skill that they have at the agency. The Bakken and Three Forks - EERC really doubled down on the Bakken. Project Tundra and Dakota Power are two North Dakota companies in the oilfield and is all EERC driven.

David Straley, Manager of Government & Public Affairs, North American Coal Corporation, Bismarck, ND:

No written testimony. I wear a couple hats here; one is as an EERC foundation member. Also working with our geologists at the mine site. I can't really speak from the power plant side, but from an asset resource that you have in ND, you as a state, the mineral owners, the coal industry and those of us in the coal mining world, would love to see those billions and billions of tons put to use. What that means on a balance sheet for the State of North Dakota is insane. With all the research, they have really helped our industry sustain itself over the last decade. We are asking for a do pass.

Dustin Willett, COO, Red trail Energy:

Testimony in support of SB 2249 - Attached # 4.

Gerry Pfaul, Senior Manager of Project Development, Minnkota Power Cooperative:

Testimony in support of SB 2249 - Attached # 5.

(37:48) Jonathan Fortner, Government Relations Director, Lignite Energy Council:

Testimony in support of SB 2249 - Attached # 6.

(40:32) Mason Sisk, Economic Development Association of North Dakota

Testimony in support of SB 2249 - Attached # 7.

Vice Chair Krebsbach: Final testimony for, against, neutral? Any further questions?

Closed the hearing on SB 2249.

2019 SENATE STANDING COMMITTEE MINUTES

Appropriations Committee Harvest Room, State Capitol

SB 2249
2/6/2019
JOB # 32239

☐ Subcommittee
☐ Conference Committee

Committee Clerk Signature Alice Delzer
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Explanation or reason for introduction of bill/resolution:

A BILL for an act to provide an appropriation for the state energy research center. (DPA)

Minutes:

1. Proposed Amendment # 19.0739.01001

Chairman Holmberg: called the Committee to order on SB 2249. All committee members were present. Adam Mathiak, Legislative Council and Stephanie Gullickson, OMB were also present.

Senator Bekkedahl: presented and explained Attachment # 1 - Amendment # 19.0739.01001. **He moved the amendment. 2nd by Senator Dever.**

Chairman Holmberg: called for a voice vote on the amendment. It carried.

Senator Bekkedahl: Moved a Do Pass as Amended on SB 2249. **2nd by Senator Poolman.**

Senator Mathern: How does this money relate to the additional money given to the research institutions? Would this be an addition to that or a part of that?

Senator Bekkedahl: This is would be a separate grant for this facility operation. What its being put in place for is long term funding that's replacing federal funding for the grants they used to get to keep the research going at this center.

Chairman Holmberg: Call the roll on SB 2249. **A Roll Call vote was taken. Yea: 14; Nay: 0; Absent:0. Senator Bekkedahl will carry the bill.** the hearing was closed on SB 2249.

sl
1201

PROPOSED AMENDMENTS TO SENATE BILL NO. 2249

Page 2, line 11, remove "in the general fund,"

Page 2, line 12, replace "tax relief fund, or lignite research fund" with "under section 57-51.1-07.5"

Page 2, line 15, replace "as" with "on"

Page 2, line 15, replace "appropriation" with "basis"

Page 2, line 15, after "to" insert "the industrial commission for distribution to"

Page 2, line 15, replace "to be used" with ". The state energy research center shall use the funds"

Renumber accordingly

STATEMENT OF PURPOSE OF AMENDMENT:

This amendment clarifies the process for allocating oil and gas tax revenues to the newly created state energy research center fund. This amendment also distributes funding to the state energy research center through the Industrial Commission rather than directly appropriating the funds to the center.

Date: 2-6-2019
Roll Call Vote #: 1

2019 SENATE STANDING COMMITTEE
ROLL CALL VOTES
BILL/RESOLUTION NO. 2249

Senate Appropriations Committee

☐ Subcommittee

Amendment LC# or Description: 19.0739.01001

Recommendation: ☒ Adopt Amendment
☐ Do Pass ☐ Do Not Pass ☐ Without Committee Recommendation
☐ As Amended ☐ Rerefer to Appropriations
☐ Place on Consent Calendar
Other Actions: ☐ Reconsider ☐ _____

Motion Made By Bekk Dahl Seconded By Dever

Senators	Yes	No	Senators	Yes	No
Senator Holmberg			Senator Mathern		
Senator Krebsbach			Senator Grabinger		
Senator Wanzek			Senator Robinson		
Senator Erbele					
Senator Poolman					
Senator Bekkedahl					
Senator G. Lee					
Senator Dever					
Senator Sorvaag					
Senator Oehlke					
Senator Hogue					

Total (Yes) _____ No _____

Absent _____

Floor Assignment _____

If the vote is on an amendment, briefly indicate intent:

*Voice Vote
Carried*

Date: 2-6-2019
Roll Call Vote #: 2

2019 SENATE STANDING COMMITTEE
ROLL CALL VOTES
BILL/RESOLUTION NO. 2249

Senate Appropriations Committee

☐ Subcommittee

Amendment LC# or Description: _____

Recommendation: ☐ Adopt Amendment
☒ Do Pass ☐ Do Not Pass ☐ Without Committee Recommendation
☒ As Amended ☐ Rerefer to Appropriations
☐ Place on Consent Calendar
Other Actions: ☐ Reconsider ☐ _____

Motion Made By Bekkedahl Seconded By Poolman

Senators	Yes	No	Senators	Yes	No
Senator Holmberg	<input checked="" type="checkbox"/>		Senator Mathern	<input checked="" type="checkbox"/>	
Senator Krebsbach	<input checked="" type="checkbox"/>		Senator Grabinger	<input checked="" type="checkbox"/>	
Senator Wanzek	<input checked="" type="checkbox"/>		Senator Robinson	<input checked="" type="checkbox"/>	
Senator Erbele	<input checked="" type="checkbox"/>				
Senator Poolman	<input checked="" type="checkbox"/>				
Senator Bekkedahl	<input checked="" type="checkbox"/>				
Senator G. Lee	<input checked="" type="checkbox"/>				
Senator Dever	<input checked="" type="checkbox"/>				
Senator Sorvaag	<input checked="" type="checkbox"/>				
Senator Oehlke	<input checked="" type="checkbox"/>				
Senator Hogue	<input checked="" type="checkbox"/>				

Total (Yes) 14 No 0

Absent 0

Floor Assignment Bekkedahl

If the vote is on an amendment, briefly indicate intent:

REPORT OF STANDING COMMITTEE

SB 2249: Appropriations Committee (Sen. Holmberg, Chairman) recommends **AMENDMENTS AS FOLLOWS** and when so amended, recommends **DO PASS** (14 YEAS, 0 NAYS, 0 ABSENT AND NOT VOTING). SB 2249 was placed on the Sixth order on the calendar.

Page 2, line 11, remove "in the general fund,"

Page 2, line 12, replace "tax relief fund, or lignite research fund" with "under section 57-51.1-07.5"

Page 2, line 15, replace "as" with "on"

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2019 HOUSE APPROPRIATIONS

SB 2249

2019 HOUSE STANDING COMMITTEE MINUTES

Appropriations Committee Roughrider Room, State Capitol

SB 2249
3/5/2019
33248

- ☐ Subcommittee
☐ Conference Committee

Committee Clerk: Risa Bergquist

Explanation or reason for introduction of bill/resolution:

Relating to the state energy research center and the state energy research center fund

Minutes:

Attachments 1-4

Chairman Delzer: Called the hearing to order for SB 2249.

-4:00 Senator Holmberg: (see attachment 1) ND is blazing great trails in energy. SB 2249 would create state energy research center at the EERC. EERC still does research but it is targeted research, they don't have the opportunity or the funding to do what they used to do, exploratory research in various areas. The bill is pretty simple it says up to 6 million per biennium could be used, the estimate by the legislative council is that the money would get there within the first 6 months of the biennium.

Chairman Delzer: We currently have a certain amount of money that goes to oil and gas research, have you done any research on how much of that money is going to EERC already?

Senator Holmberg: I don't know the exact amount on money but it is not for the exploratory research, which is what we are focusing on here.

Chairman Delzer: But our current language gives a certain amount to oil and gas research, how much is that? Is that 10 million a biennium?

Adam Mathiak, LC: That is correct, it would be similar language with 2% but instead of up to 6 million as used here it would be up to 10 million.

Chairman Delzer: Do we have an exclamation of where that fund has been going?

Mr. Mathiak: I don't have that off hand, the industrial commission as provided some information to the committees on the use of the money. I can get that for you.

Chairman Delzer: Have you had any discussion about industry match and when did the feds pull the money?

Senator Holmberg: If we have industry match then they want a certain type of research, here we are talking about the kind of research that happens when we are looking for answers to various problems before the industries are involved or see the value. 2010 is when the earmarks quit from the federal government, and there is a chart of what happened after they lost that money.

7:10 Representative Kempenich: How broad of a conversation is this?

Senator Holmberg: If you look back at the track record that they had it was very board view of energy.

Chairman Delzer: Is there anything is this bill that restricts if from being used for buildings?

Senator Holmberg: I don't believe there is any language about that in here, I don't think they are looking for buildings but maybe some equipment.

Representative Monson: Who would own any patents? Would that state own that?

Chairman Delzer: I think we have eased off of that with the state because we were losing some good researchers because they weren't allowed to have ownership.

10:20 Representative Mock: I would like to express my support for this bill, they are an incredible contributor to the Grand Forks academic and research scene and phenomenal resource for energy development and research across the state of North Dakota.

11:35-22:00 Brian Kalk, Director Energy Systems & Development: (see attachment 2)

Chairman Delzer: This would be the first time that you guys would get direct appropriation from the state of North Dakota?

Mr. Kalk: this would be the first time that we would get money that we could do what we wanted with.

Representative Martinson: Didn't we give them some money for their building a few years ago?

Dr. Kalk: I can check back on that; we don't get money from the state very often.

14:10 Continuing

16:35 Chairman Delzer: If you get this 6 million every biennium, do you have a list of what you will be planning on using this?

Dr. Kalk: We do, like right now if we had the money we would be looking at the value add from products of coal, making synthetic graphite out of it. We are also looking at ways to take electricity and making ammonia out of ammonia fuel cells. If we have a spin off from working in the blue space it may be in the green space. (from the diagram on page 2 of attachment 2) When we are out there trying to do a demonstration a problem may come up and then we are back in the green to fix that problem.

18:20 Continuing Page 3 of attachment 2

21:50 Chairman Delzer: Would you expect this to be for mostly FTEs?

Dr. Kalk: I don't think so; we have some great people out there working. The money we bring in is how we hire people so if there is work for more we'll hire them but it might only be for that particular job.

Chairman Delzer: You don't think there should be any kind of match required to use any of this money?

Dr. Kalk: We will work with whatever you decide, but the match is a good model but that again restricts what we can research.

23:30 Representative Kempenich: How broad of a sweep are you looking at?

Dr. Kalk: We do a lot of projects together, UND NDSU and EERC, the ammonia project that I am talking about actually the researchers at EERC are doing the fuel cell portion of it and the researchers at NDSU are actually developing the membranes that we are hoping to make work. We know that if we submit a proposal with NDSU and/or UND on it we feel that we have a better chance of getting funding federally or even from the state so we work together a lot.

25:30 Chairman Delzer: Are you actually part of UND?

Dr. Kalk: I am a state employee; we pay into the state retirement plan but all the dollars that we get are money that we bring in. My boss works for the president but the president doesn't allow FTEs to come over to the EERC. We are part of UND but it's important that we raise our own dollars.

27:00-28:00 Mason Sisk, Economic Development association: (see attachment 3)

Chairman Delzer: Does your association donate any money to the EERC?

Mr. Sisk: No we do not.

Representative Monson: EDND had a line in the commerce budget, would this money be better in the commerce budget and then allocated over for EERC projects?

Mr. Sisk: We're just a private nonprofit so we're not affiliated.

Chairman Delzer: We might want to know what you are going to do with it before you receive it.

29:45-31:55 Johnathan Fortner, Government Relations Director for the Lignite Energy Council: (see attachment 4)

Chairman Delzer: HB 1066 that we passed recently dedicated 3 million dollars to the lignite research council; what about using that for this?

Mr. Fortner: We would leverage the two funds together to do more projects.

Chairman Delzer: Dr. Kalk, what would you think if we asked for you to say what the money is for before you had access to it?

Dr. Kalk: Don't expect a blank check, you've got to have some check and balances.

Chairman Delzer: We have a certain problem of having someone in the interim able to okay something like this as well.

34:00 Representative Beadle: What type of bench marks should we be looking at or looking for?

Dr. Kalk: We submit proposals for anything, we have a time line, here's the bench marks here's the measurable scope if it. We would do the same thing for these dollars. We have plenty of people that want to use this money, we would have them all submit their ideas if we have 12 months to prove or disprove the idea that would be a bench mark.

Representative Beadle: Say we did this but we put a sunset on it, what would you think the expectable markers would be for us to look at?

Dr. Kalk: I think it could be that we are moving the needle each time, a lot of the work doesn't happen in a year. We would have to be moving from this idea to there.

Chairman Delzer: How did they come up with the 6 million?

Dr. Kalk: I wanted to make sure we could use it. We have to make sure we have good projects, good people.

Chairman Delzer: If this bill was to die this money would flow to the SIIF fund, if it was a lesser amount with some benchmarks or a sunset on it, could you prove to us the value in two years?

Dr. Kalk: I would really think we could do that. That's our goal here is to prove that we need this funding and we want to show the products that we are working on.

38:35 Representative Monson: If we were to put some of this money aside into the commerce and earmarked it for your projects but you would then have to go to them and say what you are wanting the money for, would that work?

Chairman Delzer: I think I'd rather you answered directly to the legislature rather than the commerce.

Dr. Kalk: You had a question about equipment? We may need to buy some equipment with this money but I would never imagine buildings.

Chairman Delzer: Is there any rent right now? Is your building paid for?

Dr. Kalk: We own our buildings; we are paying down our own bond.

Chairman Delzer: You don't think they would ask for any of this to help pay that bond?

Mr. Kalk: I wouldn't imagine that at all and if there was language in there to say that I don't think that would be a problem at all. The goal here is for us to be able to do more research.

Chairman Delzer: Is there any further testimony? Is there any opposition? Seeing none we will close this hearing.

2019 HOUSE STANDING COMMITTEE MINUTES

Appropriations Committee Roughrider Room, State Capitol

SB 2249
4/5/2019
34562

- ☐ Subcommittee
☐ Conference Committee

Committee Clerk: Risa Bergquist by DeLores D. Shimek
--

Explanation or reason for introduction of bill/resolution:

Relating to the state energy research center and the state energy research center fund.

Minutes:

--

Chairman Delzer: (Amendment 02005) Handed out proposed amendment. This bill would set up a state energy research center at the EERC. It is renaming parts of it as a research center; which it is. It does have language on paragraph two of it the state energy research center shall report all research activities and accomplishments biannually to the interim legislative energy development and transmission committee and to the Industrial Commission. This amendment I handed out doesn't have anything to do with that. I wonder if we shouldn't say annually. I think we should have it so at the call of any legislative appropriations committee, if they wish to get that report, that they can get it as well. I think we should think about putting that in. I did ask counsel to talk about the way it is worded on the continuing appropriations 2% of the revenues; based on 57-51.1-07.5; which I think is the bucket section. That 2% actually ends up being about \$40 million. We certainly don't need 2% in there. 1% is more than enough unless it really would drop. I don't know if we should be using that much money on research. This is pretty wide open research. The amendment I handed out also deals with changing the \$6 million to \$5 million. It would be capped at \$5 million per biennium. Brady how hard would it be to change that language and incorporate it into this amendment to say annually on the report and add at the request of the appropriation committee? (4:15)

Brady: That wouldn't be difficult at all.

Representative Nathe: (5:45) In regards to the amendment this \$5 million per biennium; the 1% of the state share; they would get that and it would fill?

Chairman Delzer: That would fill. It comes before anything else. It is one of those like the heritage fund; the lignite research fund and all of that. It would fill before it starts flowing to any the others.

Representative Holman: What the reason for cutting 6 to 5?

Chairman Delzer: Because they said that's all they could spend so we should at least say we expect some results. I am not sure whether we should consider putting a sunset on it for four years so it is looked at in two years.

Representative Bellew: My concern is the continuing appropriation.

Chairman Delzer: That is why we need to put the sunset on.

Representative Monson: We could do it as a one time and have a two year look back.

Chairman Delzer: if we do a sunset I think we should give them 4 years; two years isn't a lot of time. They would not have information that would be valid enough in that timeframe. The twenty-three session would have to look hard at whether they wanted to continue that or not. That is \$10 million and that is quite a bit.

Representative Monson: I would move that it is an annual report and a four-year sunset

Representative Beadle: Second

Chairman Delzer: We now amendment the .02005 with the appropriations committee notified and can request the report as well as the Energy and Transmission Committee and the Industrial Commission and with a sunset of June 30, 2023

Representative Kempenich: Over the years we have done \$10 million into research.

Chairman Delzer: Further discussion? Voice vote all in favor, motion carries.

Representative J. Nelson: I am offering this amendment simply states that they can't conduct research for the purpose of high-level radioactive waste. (amendment .02004) The state of ND is not interested in this type of industry in ND. This would be a message to EERC that they should also get on board with the state in this area and not consider that type of industry again like they did three years ago.

Chairman Delzer: Could we put it in there that they could do it if it was going to be stored somewhere other than North Dakota. So if some other state wanted them to do some research for them that they could possibly do it? So the research would have nothing to do with ND ever accepting the nuclear rays?

Representative J. Nelson: I can't imagine why we would want to do that anywhere, but if it doesn't include ND I wouldn't care.

Chairman Delzer: I don't know if they ever be asked or whatever; but we do want the essence that the statement made in the bill was that ND doesn't want it.

Representative J. Nelson: You would say they could do research for another state but that research would get back into North Dakota. I think some of the work they have done has

been in cooperation with Skakatchewan, Canada in carbon sequestration. If someone looked at it, they could say that research could somehow get incorporated into ND at some point in time. I think it is a danger to do that, but if that is what it takes we could consider that. I think this is pretty clean.

Chairman Delzer: You don't think the bill that was passed gives them that?

Representative J. Nelson: The reason I did this is because in the prohibition section of Senate Bill 2037 the work exploration is not included in that. my hope was that bill wouldn't go to conference. It did go to conference. I am attempting to get the word exploration and testing included in the prohibition there. I didn't know it was going to conference until yesterday and I had this amendment prepared before that. That language needs to be somewhere in code and this is the only vehicle to do this with. The Senate had a questions about the exterior border of ND and the Senate didn't know what that meant.

Representative Kempenich: I think looking at stuff that is in prohibition becomes a problem. I think the locals would have to permit something like this to start with.

Representative J. Nelson: Locals don't have any say in this, as our law reads if a permit comes forward they would have the authority. There is no local voice in this. That goes to the Industrial Commission. If the legislature is in session it comes to the legislature.

Chairman Delzer: I think there's an opportunity that this bill may not go to conference; if we put this on I would think the EERC and Senator Holmberg would likely have problems with us saying the EERC can't do something. if we don't out this on there.

Representative Martinson: I am a big fan of the EERC. I think they do some incredible work up there and they do it around the world. I would like to see you add North Dakota in this bill so it's not quite so restrictive.

Representative J. Nelson: I would like to see this language in there if that is the will of the committee to allow that flexibility.

Representative Martinson: Move the amendment 19.00739.02004 with the addition of ND at the end.

Chairman Delzer: So the only time they couldn't so research is if it was based but can't come back to ND it can go somewhere else, but it can't be used in ND.

Representative Beadle: Would it make sense if we put it on the line instead of at the end. If we are doing it on a global scale prohibiting that might be a problem in ND. I don't know if that makes a difference?

Brady Larson, LC: Representative Beadle might work better.

Chairman Delzer: So we might want to say State Energy and Research Center may not conduct research or pursue projects that may result in or be related to exploration, storage treatment or disposal of high level radioactive waste in ND?

Representative Martinson: We don't want them from doing research in North Dakota we just want to make sure the project doesn't end up in North Dakota.

Mr. Larson, LC: It might be worded the center may not conduct research or pursue projects that result in the exploration, storage, treatment or disposal of high radioactive waste in ND.

Representative Beadle: Second that motion.

Discussion:

Chairman Delzer: voice vote carried

Representative Beadle: Do pass as amended

Representative Monson: Seconded

Chairman Delzer: Motion for a do pass as amended

A Roll Call vote was taken. Yea: 17 Nay: 2 Absent: 2

Representative Beadle will carry

PROPOSED AMENDMENTS TO ENGROSSED SENATE BILL NO. 2249

Page 2, line 12, replace "two" with "one"

Page 2, line 13, replace "six" with "five"

Renumber accordingly

STATEMENT OF PURPOSE OF AMENDMENT:

This amendment decreases the allocation of oil and gas tax revenue to a newly created state energy research center fund from 2 percent of the state's share limited to \$6 million per biennium to 1 percent of the state's share limited to \$5 million per biennium.

PROPOSED AMENDMENTS TO ENGROSSED SENATE BILL NO. 2249

Page 2, after line 6, insert:

"4. The state energy research center may not conduct research or pursue projects related to the exploration, storage, treatment, or disposal of high-level radioactive waste."

Renumber accordingly

DP 4/6/19

PROPOSED AMENDMENTS TO ENGROSSED SENATE BILL NO. 2249

Page 1, line 3, remove "and"

Page 1, line 3, after "appropriation" insert "; to provide a report; and to provide an expiration date"

Page 1, line 7, after "**center**" insert "**- Report**"

Page 1, line 19, replace "biennially" with "annually"

Page 1, line 20, after the underscored period insert "Upon request, the state energy research center shall report all research activities and accomplishments to the appropriations committees of the legislative assembly."

Page 2, after line 6, insert:

"4. The state energy research center may not conduct research or pursue projects that will result in the exploration, storage, treatment, or disposal of high-level radioactive waste in North Dakota."

Page 2, line 12, replace "two" with "one"

Page 2, line 13, replace "six" with "five"

Page 2, after line 16, insert:

"SECTION 3. EXPIRATION DATE. This Act is effective through June 30, 2023, and after that date is ineffective."

Renumber accordingly

STATEMENT OF PURPOSE OF AMENDMENT:

This amendment:

- Decreases the allocation of oil and gas tax revenue to a newly created state energy research center fund from 2 percent of the state's share limited to \$6 million per biennium to 1 percent of the state's share limited to \$5 million per biennium;
- Adjusts the reporting requirements of the State Energy Research Center;
- Provides the State Energy Research Center may not conduct research or pursue projects that will result in the exploration, storage, treatment, or disposal of high-level radioactive waste in North Dakota; and
- Provides an expiration date of June 30, 2023 for the bill.

Date: 4/5/2019
Roll Call Vote #: 1

**2019 HOUSE STANDING COMMITTEE
ROLL CALL VOTES
BILL/RESOLUTION NO. SB 2249**

House Appropriations Committee

☐ Subcommittee

Amendment LC# or Description: **19.00739.02005 Further amend to report annually and add 4 Year Sunset**

Recommendation: ☒ Adopt Amendment
☐ Do Pass ☐ Do Not Pass ☐ Without Committee Recommendation
☐ As Amended ☐ Rerefer to Appropriations
☐ Place on Consent Calendar
Other Actions: ☐ Reconsider ☐ _____

Motion Made By Representative Monson Seconded By Representative Beadle

Representatives	Yes	No	Representatives	Yes	No
Chairman Delzer					
Representative Kempenich					
Representative Anderson			Representative Schobinger		
Representative Beadle			Representative Vigesaa		
Representative Bellew					
Representative Brandenburg					
Representative Howe			Representative Boe		
Representative Kreidt			Representative Holman		
Representative Martinson			Representative Mock		
Representative Meier					
Representative Monson					
Representative Nathe					
Representative J. Nelson					
Representative Sanford					
Representative Schatz					
Representative Schmidt					

Total (Yes) _____ No _____

Absent _____

Floor Assignment _____

Voice Vote/Motion Carries

Date: 4/5/2019
Roll Call Vote #: 2

**2019 HOUSE STANDING COMMITTEE
ROLL CALL VOTES
BILL/RESOLUTION NO. SB 2249**

House Appropriations Committee

☒ Subcommittee

Amendment LC# or Description: **19.00739.02004 Further Amend adding "in North Dakota"**

Recommendation: ☒ Adopt Amendment
☐ Do Pass ☐ Do Not Pass ☐ Without Committee Recommendation
☐ As Amended ☐ Rerefer to Appropriations
☐ Place on Consent Calendar
Other Actions: ☐ Reconsider ☐ _____

Motion Made By Representative Martinson Seconded By Representative Beadle

Representatives	Yes	No	Representatives	Yes	No
Chairman Delzer					
Representative Kempenich					
Representative Anderson			Representative Schobinger		
Representative Beadle			Representative Vigesaa		
Representative Bellew					
Representative Brandenburg					
Representative Howe			Representative Boe		
Representative Kreidt			Representative Holman		
Representative Martinson			Representative Mock		
Representative Meier					
Representative Monson					
Representative Nathe					
Representative J. Nelson					
Representative Sanford					
Representative Schatz					
Representative Schmidt					

Total (Yes) _____ No _____

Absent _____

Floor Assignment _____

Voice Vote/Motion Carries

Date: 4/5/2019
Roll Call Vote #: 3

**2019 HOUSE STANDING COMMITTEE
ROLL CALL VOTES
BILL/RESOLUTION NO. SB 2249**

House Appropriations Committee

☐ Subcommittee

Amendment LC# or Description: _____

Recommendation: ☐ Adopt Amendment
☒ Do Pass ☐ Do Not Pass ☐ Without Committee Recommendation
☒ As Amended ☐ Rerefer to Appropriations
☐ Place on Consent Calendar
Other Actions: ☐ Reconsider ☐ _____

Motion Made By Representative Beadle Seconded By Representative Monson

Representatives	Yes	No	Representatives	Yes	No
Chairman Delzer		X			
Representative Kempenich	X				
Representative Anderson	X		Representative Schobinger		X
Representative Beadle	X		Representative Vigesaa	X	
Representative Bellew	X				
Representative Brandenburg	A				
Representative Howe	X		Representative Boe	X	
Representative Kreidt	X		Representative Holman	X	
Representative Martinson	X		Representative Mock	A	
Representative Meier	X				
Representative Monson	X				
Representative Nathe	X				
Representative J. Nelson	X				
Representative Sanford	X				
Representative Schatz	X				
Representative Schmidt	X				

Total (Yes) 17 No 2

Absent 2

Floor Assignment Representative Beadle

REPORT OF STANDING COMMITTEE

SB 2249, as engrossed: Appropriations Committee (Rep. Delzer, Chairman) recommends **AMENDMENTS AS FOLLOWS** and when so amended, recommends **DO PASS** (17 YEAS, 2 NAYS, 2 ABSENT AND NOT VOTING). Engrossed SB 2249 was placed on the Sixth order on the calendar.

Page 1, line 3, remove "and"

Page 1, line 3, after "appropriation" insert "; to provide a report; and to provide an expiration date"

Page 1, line 7, after "**center**" insert "- **Report**"

Page 1, line 19, replace "biennially" with "annually"

Page 1, line 20, after the underscored period insert "Upon request, the state energy research center shall report all research activities and accomplishments to the appropriations committees of the legislative assembly."

Page 2, after line 6, insert:

"4. The state energy research center may not conduct research or pursue projects that will result in the exploration, storage, treatment, or disposal of high-level radioactive waste in North Dakota."

Page 2, line 12, replace "two" with "one"

Page 2, line 13, replace "six" with "five"

Page 2, after line 16, insert:

"SECTION 3. EXPIRATION DATE. This Act is effective through June 30, 2023, and after that date is ineffective."

Renumber accordingly

STATEMENT OF PURPOSE OF AMENDMENT:

This amendment:

- Decreases the allocation of oil and gas tax revenue to a newly created state energy research center fund from 2 percent of the state's share limited to \$6 million per biennium to 1 percent of the state's share limited to \$5 million per biennium;
- Adjusts the reporting requirements of the State Energy Research Center;
- Provides the State Energy Research Center may not conduct research or pursue projects that will result in the exploration, storage, treatment, or disposal of high-level radioactive waste in North Dakota; and
- Provides an expiration date of June 30, 2023 for the bill.

2019 TESTIMONY

SB 2249

/ SB 2249
1-31-2019
AS /

Senate Appropriations Committee

January 31, 2019

Honorable Senator Ray Holmberg, Chairman

Senate Bill 2249

Testimony by Senator Brad Bekkedahl

Chairman Holmberg and Committee Members,

I am honored to stand as a co-sponsor to this legislation and support it with testimony today. Senate Bill 2249 provides critical resources to fund research that directly impacts and improves resource recovery in the Bakken oil development system in western North Dakota. The Energy and Environmental Research Center at Grand Forks has provided critical staff and facilities for testing and proving oil production development techniques that have already shown results in improving production rates and ultimate recoveries in the Bakken and other formations in the Williston Basin. What they do and have done translates directly into more production, reductions in costs for development, and ultimately, more revenue to the operators to continue their drilling and production plans in our state. And, these improvements have led to more state tax revenue in oil and sales taxes, as well as higher returns to the mineral royalty interests. They have an incredible relationship with the industry, and it pays dividends for all of us.

I respectfully request a Do Pass recommendation on SB 2249 and will stand for any questions at this time.

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Senate Bill 2249
Testimony of Thomas A. Erickson, UND EERC CEO

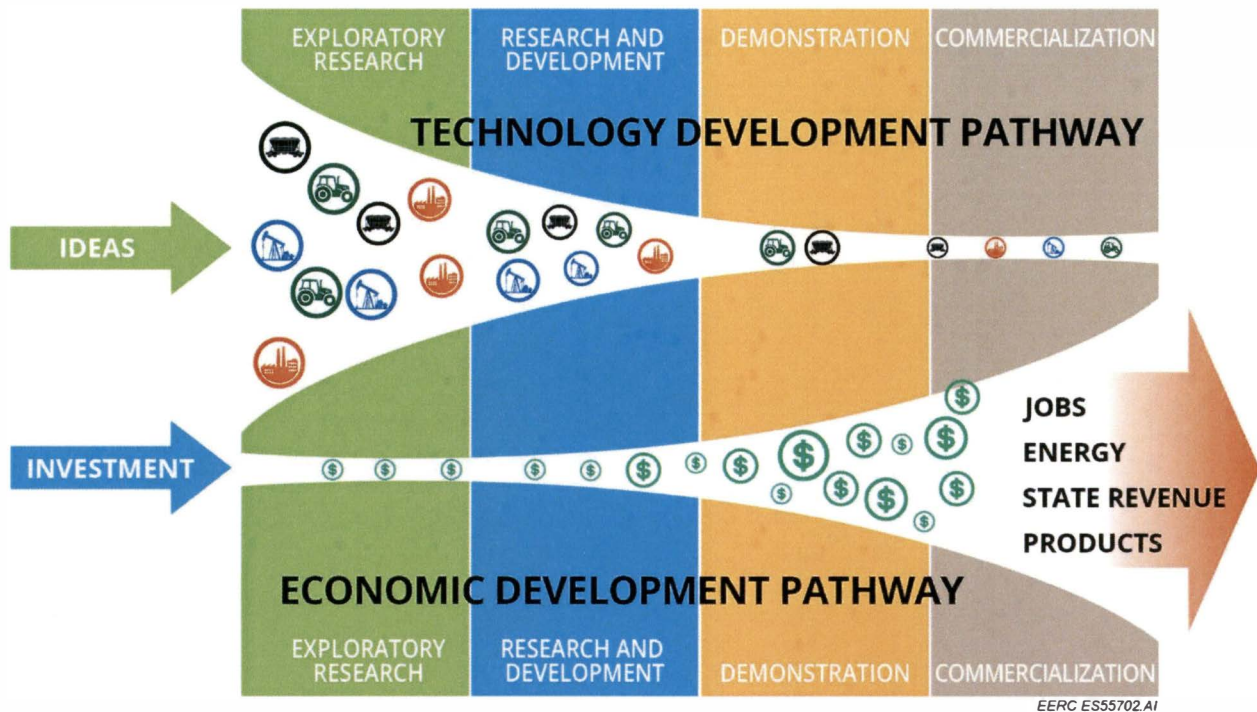
Mr. Chairman and members of the committee, my name is Tom Erickson. I am proud to be the CEO of the University of North Dakota (UND) Energy & Environmental Research Center, more commonly known as the EERC. Although the EERC is part of UND, and under the auspices of the state of North Dakota, we are funded through competitive contracts with industry, the federal government, and the state of North Dakota through the Industrial Commission and the Department of Commerce. In a very real sense, we are responsible for generating our own income.

Prior to 2011, the EERC was a frequent beneficiary of federally directed resources (aka “earmarks”). We were designated as the National Center for Hydrogen Technology, the Center for Air Toxic Metals, and other similar designations that focused on providing critical research to the United States. One extremely valuable component of these directed dollars was the opportunity to conduct exploratory research. Exploratory research is fundamental in nature and focuses on answering “what-if” and “how could we” types of questions. Exploratory research typically is far too early in its commercial development to attract supporting resources from industry, but this research often generates “game-changing” commercial technologies, leading to new jobs, additional energy, increased state revenue, and new valuable products, as shown in the following diagram. For example, developing methods to sample and measure mercury directly led to the commercial spin-off of the EERC’s proprietary mercury control technology; understanding fine aerosol formation from lignite is now supporting the commercial development of Project Tundra; a scientist and a machinist got together and discussed “If I only

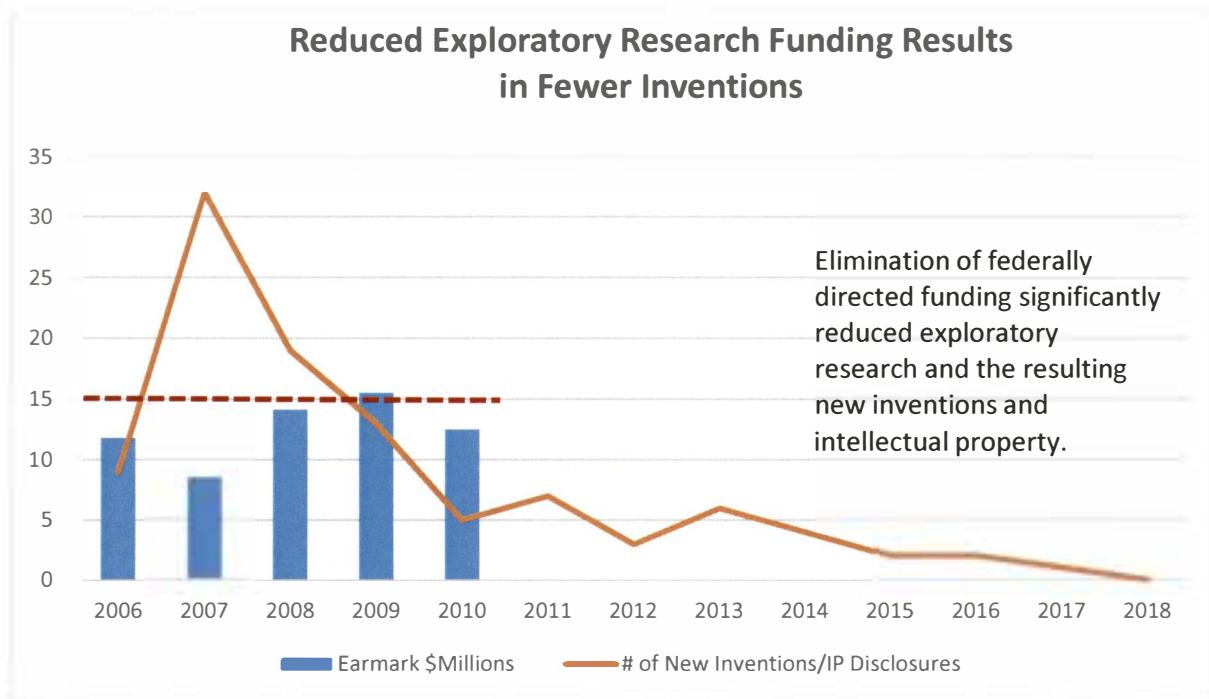
2

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had a way to visualize the interactions of oil and CO₂ at pressure” and developed a new test cell that enhances our understanding of the future of Bakken enhanced oil recovery (EOR).



However, the federal dollars supporting this exploratory research disappeared. During the last 5 years that the EERC received directed dollars (2006–2010), EERC researchers completed an average of 15 invention disclosures a year, largely a result of exploratory research, as shown in the accompanying graph. Each invention disclosure represented a new idea or concept that had commercial value going forward. During the last 4 years, with no directed dollars, the EERC has averaged less than 3 invention disclosures a year. The lack of exploratory research funding caused a significant decline in our ability to explore, to invent, and to problem-solve. Many of these invention disclosures and new analytical techniques, begun as exploratory research, are in commercial application or demonstration today in North Dakota.



The EERC today has a different look and feel from that of the past. After the loss of precommercial, exploratory research dollars, we worked to transform the organization into one almost exclusively focused on applied research (which has always been a significant part of our research portfolio), with very little ability to conduct exploratory research. Today the EERC is a world-class applied research center. We are a critical member of the team that has made North Dakota's energy industry a model for success around the world. We cherish the critical role we currently play and will strive to provide even more of this service to our state in the future.

Bill 2249 would create the North Dakota State Energy Research Center at the EERC to allow the EERC to enhance its service to North Dakota. This funding would support North Dakota through 1) exploratory research, 2) ready access to EERC experts to address critical state needs in a

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timely manner, and 3) education and outreach throughout the state to advance North Dakota's critical role.

Exploratory research funding would allow us to unlock new methods, technologies, and analytical techniques. Some of the most exciting areas of opportunity include

1) techniques to understand how Bakken reservoir and source rock could be better understood and manipulated for EOR in the future, 2) methods of using wind energy to produce commodity products instead of electrons, and 3) the use of artificial intelligence and machine learning to enhance our electric grid. Once these research efforts are shown to have merit and opportunity, they would move toward commercialization through conventional applied research funding mechanisms, such as the Oil and Gas Research Program, the Lignite Research Program, or the Renewable Energy Program and the U.S. Department of Energy.

Access to EERC experts on a timely basis would allow us to rapidly and efficiently serve the state of North Dakota when topics such as Bakken oil volatility, carbon taxes, and gas flaring arise, as they have in the past. As an example, when the issue of Bakken oil volatility was in the national press almost daily, the EERC was not able to support or engage for over 9 months because no funding mechanism was available. It should be noted that the funding eventually provided for Bakken oil volatility research specifically required zero industry match to avoid any perception of industry influence in the results.

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Education and outreach in North Dakota are critical if we as a state are going to maintain our role as energy leaders. The State Energy Research Center will team with other North Dakota higher education institutions to involve students, inform the public on current operations and practices, and educate the public on the new technologies and methods on the horizon. Additionally, experiential learning opportunities for students create more engaged students, causes greater student retention, and produces a better workforce, ultimately developing the energy leaders of the future.

In summary, the EERC has demonstrated that we are a critical component advancing energy for the state of North Dakota, the industries and utilities operating in North Dakota, and the citizens of North Dakota. We are asking for your support of Bill 2249, providing us the opportunity to enhance our service to North Dakota through the establishment and funding of the State Energy Research Center. Although the return on investment of this funding may be difficult to quantify, as evidenced by past performance, the benefits of these efforts will be orders of magnitude greater than the investment.

Thank you for the opportunity to provide comments today, and thank you for your consideration of Bill 2249.

NORTH DAKOTA'S ENERGY FUTURE!

#3

North Dakota has a strong team of industry partners, state organizations, and universities dedicated to a more prosperous, cleaner, and brighter energy future. North Dakota is the role model for the world. The Energy & Environmental Research Center (EERC) is working with regional partners to advance technology to support an all-of-the-above approach to energy production, developing more synergies between energy and agriculture and a stronger, value-added approach to resources. Technology development is the answer to achieve the following goals.

GOAL 1 – Reach at Least 2 million barrels of Oil Production per day

New technologies for advanced reservoir surveillance, characterization, and enhanced recovery will allow us to quadruple Bakken recovery factors and develop new opportunities for North Dakota's conventional oil and gas resources.



GOAL 2 – Capitalize on Agricultural and Energy Synergies

North Dakota has an amazing abundance of both agricultural and energy resources. Advancing technologies for biofuels, boosting ethanol values, and developing greenhouse and fertilizer products from energy production will allow the agricultural and energy sectors of our economy to become even stronger.



GOAL 3 – Maximize Use of Natural Gas

Advancements will allow us to more efficiently use produced gas; develop value-added products like petrochemicals and fertilizers; and expand infrastructure, storage, and export opportunities.

GOAL 4 – Eliminate Pipeline Leaks

Pipelines are a critical part of our energy infrastructure and will become even more important in the future as we achieve our goals. Assessing pipeline and public safety and developing technologies that will address and prevent pipeline leaks are key to our future.



GOAL 5 – Enhance Reliability and Energy Export Opportunities

The future will require an even more sophisticated electrical grid, energy storage system, and increased pipeline infrastructure. We need to use carbon capture and storage to enhance oil recovery and reduce the carbon footprint of our energy products while boosting our energy exports. An all-of-the-above approach that uses our abundant fossil biomass, wind, and solar resources is key to a viable and prosperous future.

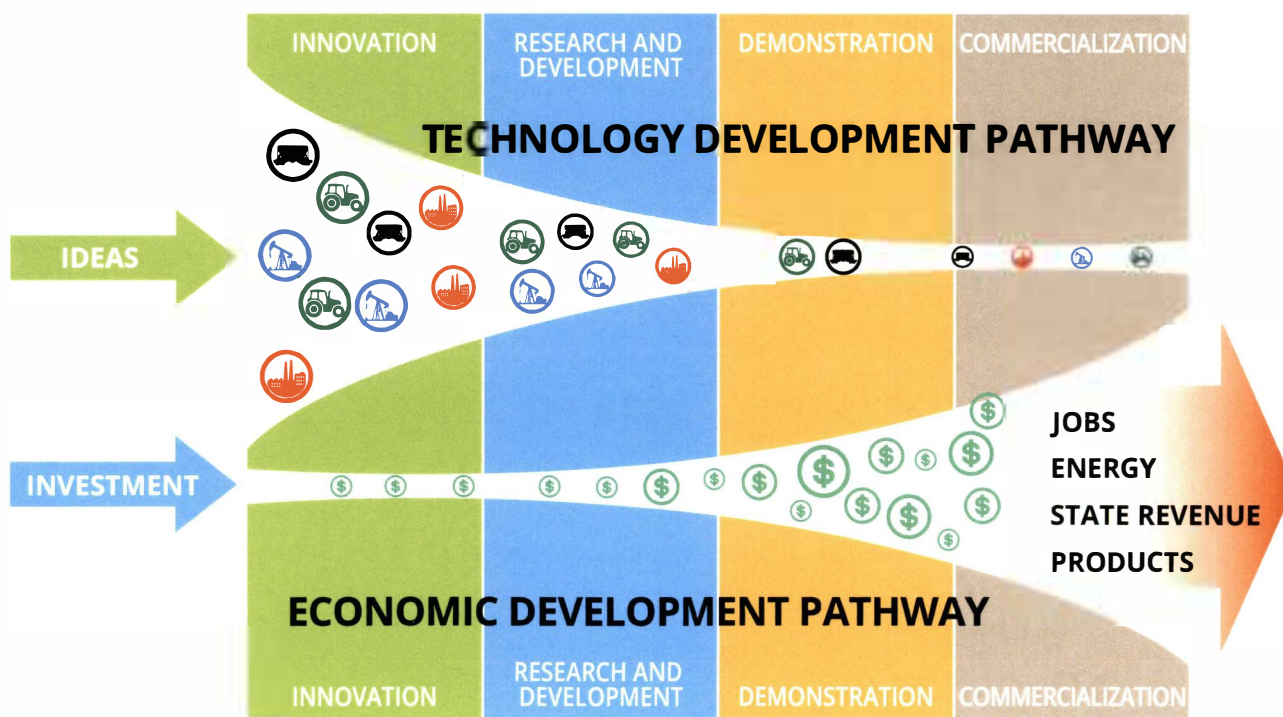
GOAL 6 – Take Full Advantage of North Dakota's 25 billion tons of Recoverable Lignite

Next-generation coal-fired power plants, combined heat and power facilities, and facilities that will produce rare-earth elements, activated carbon, carbon fibers, and other high-value products from lignite will allow us to better utilize our world-class resource.



GOAL 7 – Inform the World on Energy and Environmental Topics

In today's world, we need more than financing and permits to develop energy production, processing, and transportation infrastructure. We need social license as well. Our society demands buy-in to projects and to understand the costs and benefits of any development. We must develop the outreach and education tools that will better inform the public.



For More Information, Contact:

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terickson@undeerc.org

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University of North Dakota
15 North 23rd Street, Stop 9018
Grand Forks, ND 58202-9018

www.undeerc.org

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Testimony on Bill 2249
Senate Appropriations
Dustin Willett, Red Trail Energy

Good morning Chairman Holmberg and members of the committee. My name is Dustin Willett; I am the Chief Operating Officer for Red Trail Energy. Red Trail Energy owns and operates an ethanol plant in Richardton, ND, which produces approximately 64 million gallons of ethanol each year and employs nearly 50 people with an annual payroll approaching \$3 million. Red Trail Energy has been investigating ways to provide a competitive edge to the ND ethanol industry. One option is selling our ethanol into the West Coast's, Low Carbon Fuel Markets (LCFM's). A few years ago we became aware that carbon capture and storage (CCS) from the ethanol process could yield significant returns if a pathway could be attained in these markets. We reached out to Lynn Helms with the North Dakota Industrial Commission to get his advice on who to talk to about CCS and he immediately recommended that we call the EERC. That initial phone call with the EERC has led to several phases of work to prove up the potential for CCS at the Red Trail Energy site.

With the EERC's assistance, we have identified carbon storage options that would allow ethanol companies to reduce the carbon intensity of their ethanol, allowing them to benefit from the very significant financial credits that are available on the west coast and from federal 45Q tax credits. The key to this project is identifying suitable reservoirs that we would be able to inject our CO2 into. I have learned the EERC has been leading a program focused on identifying the sources of CO2 in our region as well as the subsurface areas that we can inject

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that CO2 for the last 15 years. This experience has proven invaluable to our commercial endeavor.

Specific to our need, was the ability to analytically characterize target storage formations approximately 6500 feet below our site and determine whether they would be suitable CO2 reservoirs. The EERC, over the last 30 years, has developed an array of advanced analytical techniques and numerical modeling simulations that are critical to us understanding these potential reservoirs. These analytical techniques utilize scanning electron microscopes with proprietary analysis capabilities, as well as fundamental rock assessment techniques that were developed by the EERC. The existence of these analytical techniques and the cutting edge numerical modeling techniques has directly resulted in our ability to technically and financially assess this project and to keep the project moving. We know that it is exploratory research activities, like those mentioned, that help to create the commercial opportunities in the future.

We feel strongly that the EERC would be a great steward of any funding provided to them to serve the state of North Dakota. Red Trail Energy supports Bill 2249.

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Senate Appropriations, Senator Ray Holmberg, Chairman

Testimony of Minnkota Power Cooperative, Gerry Pfau, Senior Manager of Project Development

Chairman Holmberg and members of the committee, my name is Gerry Pfau, I am the Senior Manager of Project Development for Minnkota Power Cooperative. More specifically, I am Minnkota's Technical Project Manager for Project Tundra, focused on the construction and operation of the first ever CO2 capture system located on a coal combustion facility in North Dakota. Project Tundra is focused on the design, construction and operation of a 455 MW carbon capture unit at Milton R. Young. The CO2 would be transported via pipeline to a North Dakota oil field for enhanced oil recovery operations or sequestered underground near the plant. The Energy & Environmental Research Center is one of our key partners in advancing this project to commercial deployment.

It is obvious that North Dakota's coal industry, as well as the coal industry throughout the United States, is under great stress. This stress comes from the financial pressures of other fossil fuels, renewable fuels, and the constant pressure from new environmental regulations. Though we have seen temporary relief from new environmental regulations under the current administration, we feel that future carbon constraints are likely not that far away. Project Tundra is a way for us, and for other, North Dakota facilities, to address those future potential carbon constraints today, and produce a value added by-product (CO2) that enhances North Dakota's oil industry, and strengthens our financial position going forward.

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Over the last few years the EERC has provided significant support and direction to Project Tundra in dealing with challenges such as fine particulate formation and control (which is critical to a CO2 capture unit's performance), analytical characterization and assessment of CO2 storage options, and insights into enhanced oil recovery operations. We know that in each of these cases, the EERC's ability to support Minnkota in advancing this project can be directly related in part, to past exploratory research that they had the latitude to do.

Research that the EERC performed in the past to gain the fundamental knowledge of lignite combustion, subsurface characterization of potential CO2 storage sites, and enhanced oil recovery visualization are leading us toward a commercial project which will generate jobs and revenues for North Dakota.

Minnkota Power Cooperative is very supportive of Bill 2249. I thank you for your time this morning.



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January 31, 2019
Testimony in Support of Senate Bill 2249
Submitted on Behalf of the Lignite Energy Council
Senate Appropriations Committee

Chairman Holmberg and Committee Members,

My name is Jonathan Fortner, the Government Relations Director for the Lignite Energy Council. The Lignite Energy Council is a regional trade association that represents over 260 members that include mining companies, lignite electricity producers and businesses that provide goods and services to the lignite industry.

The Lignite Energy Council supports Senate Bill 2249 because it will help to increase our ability to engage in additional research and development opportunities. The provisions in the bill provide necessary funding of exploratory research studies that would be complementary to the Lignite Research Development and Marketing Program. The bill also allows the flexibility to combine this exploratory research with the existing lignite research programs so we can help meet the industry goals of preserving our critically important energy assets and enhancing a variety of market opportunities for a valuable natural resource located within our state.

These important research activities would provide the investigations that are needed to generate the innovations that eventually lead to projects in the State's lignite research program. The bill language would help position North Dakota to take better advantage of current and future federal funding opportunities, such as those available from the US Department of Energy. In addition, by engaging the North Dakota Universities, the State Energy Research Center will also provide the benefit of workforce development by involving students in the exciting challenges that affect the future of North Dakota.

We are very appreciative of the research and development funding that the state provides which has led to important research and development projects. Those studies have led to technological advances that have facilitated the ongoing focus for the development of projects such as the Allam Cycle and Project Tundra. The funding is also helping to identify exciting new market opportunities for the future found in rare earth materials and other marketable products and uses for lignite. We believe this legislation will only expand upon these significant opportunities.

For these reasons, the Lignite Energy Council supports Senate Bill 2249 and we request the committee's favorable consideration. Thank you for the opportunity to speak with you today and I am happy to answer any questions that you may have.

Jonathan Fortner MBA, MPA
Director of Government Relations

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Testimony of Mason Sisk
Economic Development Association of North Dakota
In Support of SB 2249
January 31, 2019

Chairman Holmberg and members of the Senate Appropriations Committee:

My name is Mason Sisk, and I represent the Economic Development Association of North Dakota (EDND). I am testifying in support of SB 2249.

EDND represents large and small and rural and urban economic development organizations on the front line of growing businesses and communities in North Dakota. The primary purpose of the organization is to promote the creation of new wealth throughout North Dakota to develop more vibrant communities and improve quality of life.

EDND has long supported research investments that will enhance North Dakota's historical economic sectors and advance new technologies to support growth of other sectors to diversify our economy. Energy and agriculture are the two historical and leading pillars of North Dakota's economy.

The state of North Dakota has recognized the importance of and benefited from agricultural-related research. This bill would establish the State Energy Research Center to focus on research that will enhance North Dakota's energy industry by leveraging technology advancement and energy commercialization research expertise. This investment and the creation of the State Energy Research Center will support advancements that will add value to the state through enhanced productivity and further diversification of North Dakota's economy.

EDND considers the investment in research in the state as an investment for the future. We urge your support for SB 2249

PROPOSED AMENDMENTS TO SENATE BILL NO. 2249

Page 2, line 11, remove "in the general fund,"

Page 2, line 12, replace "tax relief fund, or lignite research fund" with "under section 57-51.1-07.5"

Page 2, line 15, replace "as" with "on"

Page 2, line 15, replace "appropriation" with "basis"

Page 2, line 15, after "to" insert "the industrial commission for distribution to"

Page 2, line 15, replace "to be used" with ". The state energy research center shall use the funds"

Renumber accordingly

STATEMENT OF PURPOSE OF AMENDMENT:

This amendment clarifies the process for allocating oil and gas tax revenues to the newly created state energy research center fund. This amendment also distributes funding to the state energy research center through the Industrial Commission rather than directly appropriating the funds to the center.

Establishment and Funding of the State Energy Research Center

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Senate Bill 2249 would create the State Energy Research Center (SERC) at the University of North Dakota Energy & Environmental Research Center (EERC), along with \$6,000,000 of funding per biennium.

The EERC is a key applied research partner supporting the industries serving North Dakota as well as directly supporting the State of North Dakota through the Department of Commerce and the North Dakota Industrial Commission. Through its applied research activities, the EERC helps its partners to overcome the critical technical challenges of today. Establishing SERC at the EERC would increase the EERC's service to the State of North Dakota as it performs exploratory research with a focus on the technologies and opportunities of tomorrow while simultaneously tackling the tough technical issues that our industry faces today. The loss of federal funding for exploratory research has significantly decreased the EERC's ability to perform exploratory research and has resulted in a nearly 80% decrease in new invention disclosures which lead to new opportunities for North Dakota. By its nature, exploratory research is high-risk, early-stage research, but with high risk, there is also potential for great return on investment to the State of North Dakota.

SERC would serve the State of North Dakota through 1) exploratory research specifically in support of North Dakota, 2) EERC experts to address critical State needs in a timely manner, and 3) education and outreach throughout the State to show the public the critical role North Dakota plays:

Exploratory research funding would allow the EERC to unlock new methodologies, technologies, and analytical techniques to advance North Dakota energy. Exploratory, early-stage, precommercial research that finds success will move toward commercialization through conventional applied research funding mechanisms, such as the Oil and Gas Research Program, the Lignite Research Program, or the Renewable Energy Program.

Access to EERC experts on a timely basis would allow them to rapidly and efficiently serve the State of North Dakota when topics such as Bakken oil volatility, carbon taxes, and gas flaring arise, as they have in the past.

Education and outreach in North Dakota is critical if we as a State are going to maintain our role as energy leaders. SERC will team with other North Dakota higher education institutions to involve students, inform the public on current operations and practices, and educate the public on the new technologies and methods on the horizon. Additionally, experiential learning opportunities for students create more engaged students, greater student retention, and a better workforce and develop the energy leaders of the future.

The North Dakota Industrial Commission (NDIC) will administer funding for SERC. SERC will present biennially to the Interim Energy Development and Transmission Committee and annually to NDIC. Today's rapid technological development requires this investment to ensure that North Dakota remains an energy leader for our children and grandchildren.

Sen Holmberg

House Appropriations – ~~Education and Environment Division~~

March 4, 2019

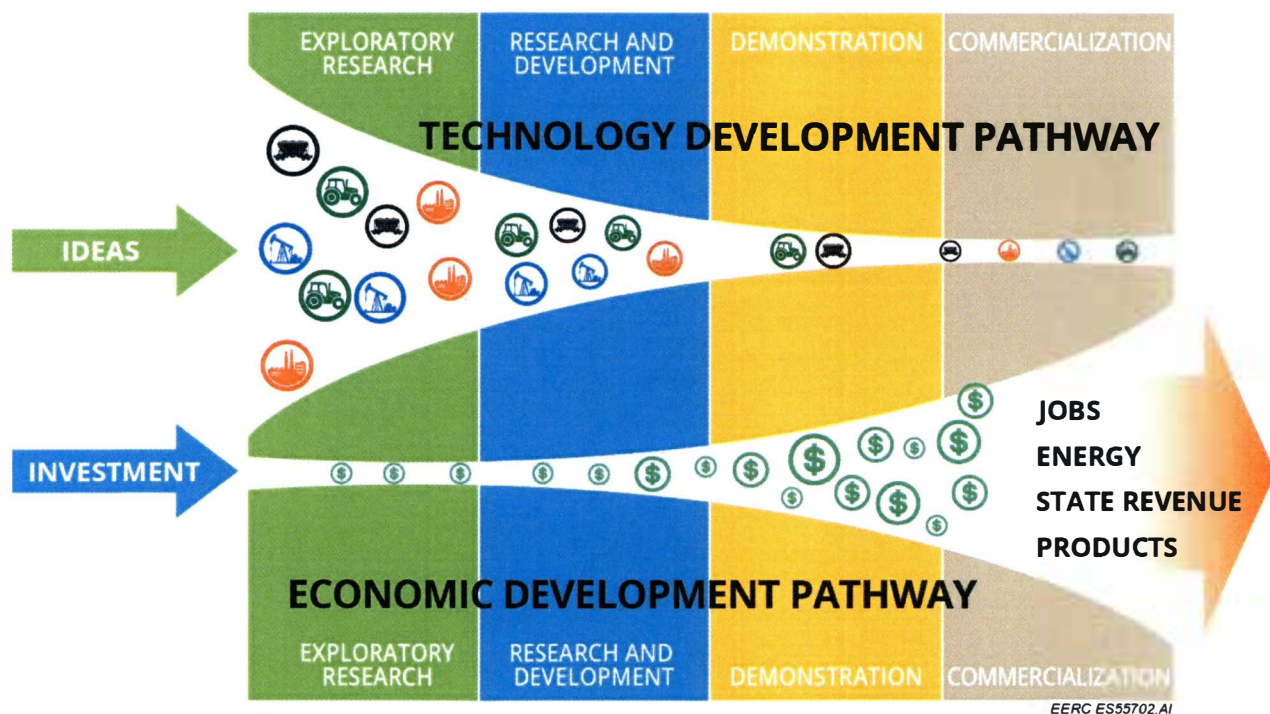
Brian Kalk
Director Energy Systems and Development
Energy & Environmental Research Center at the University of North Dakota

Chairman ^{Delzer}~~Menson~~ and members of the committee. Thank you for the opportunity to provide comments in support of SB 2249. Our CEO Mr. Tom Erickson intended to be here today but is recovering from unexpected surgery. In his absence, I'm here to offer the testimony.

My name is Brian Kalk and I am the Director of Energy Systems Development at the University of North Dakota (UND) Energy & Environmental Research Center, more commonly known as the EERC. Although the EERC is a part of UND, and under the auspices of the state of North Dakota, we are funded through competitive contracts with industry, the federal government, and the state of North Dakota through the Industrial Commission and the Department of Commerce. In a very real sense, we are responsible for generating our own income.

Prior to 2011, the EERC was a frequent beneficiary of federally directed resources (aka "earmarks"). We were designated as the National Center for Hydrogen Technology, the Center for Air Toxic Metals, and other similar designations that focused on providing critical research to the United States. One extremely valuable component of these directed dollars was the opportunity to conduct exploratory research. Exploratory research is fundamental in nature and focuses on answering "what-if" and "how could we" types of questions. Exploratory research typically is far too early in its commercial development to attract supporting resources from

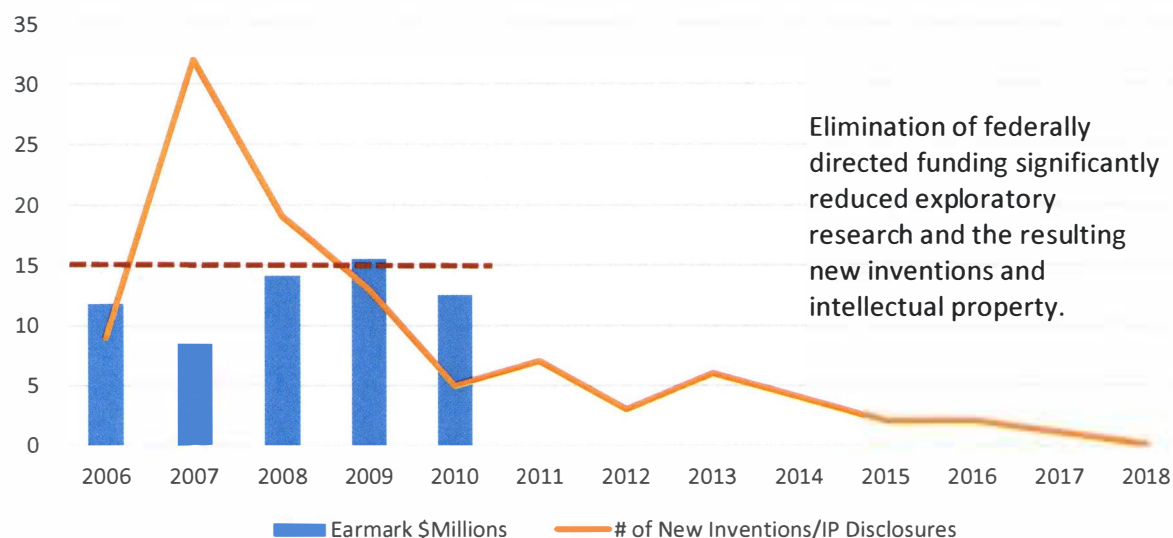
industry, but this research often generates “game-changing” commercial technologies, leading to new jobs, additional energy, increased state revenue, and new valuable products, as shown in the following diagram. For example, developing methods to sample and measure mercury directly led to the commercial spin-off of the EERC’s proprietary mercury control technology; understanding fine aerosol formation from lignite is now supporting the commercial development of Project Tundra; a scientist and a machinist got together and discussed “If I only had a way to visualize the interactions of oil and CO₂ at pressure” and developed a new test cell that enhances our understanding of the future of Bakken enhanced oil recovery (EOR).



However, the federal dollars supporting this exploratory research disappeared. During the last 5 years that the EERC received directed dollars (2006–2010), EERC researchers completed an average of 15 invention disclosures a year, largely a result of exploratory research, as shown in

the accompanying graph. Each invention disclosure represented a new idea or concept that had commercial value going forward. During the last 4 years, with no directed dollars, the EERC has averaged less than 3 invention disclosures a year. The lack of exploratory research funding caused a significant decline in our ability to explore, to invent, and to problem-solve. Many of these invention disclosures and new analytical techniques, begun as exploratory research, are in commercial application or demonstration today in North Dakota.

Reduced Exploratory Research Funding Results in Fewer Inventions



The EERC today has a different look and feel from that of the past. After the loss of precommercial, exploratory research dollars, we worked to transform the organization into one almost exclusively focused on applied research (which has always been a significant part of our research portfolio), with very little ability to conduct exploratory research. Today the EERC is a world-class applied research center. We are a critical member of the team that has made North

Dakota's energy industry a model for success around the world. We cherish the critical role we currently play and will strive to provide even more of this service to our state in the future.

SB 2249 would create the North Dakota State Energy Research Center at the EERC to allow the EERC to enhance its service to North Dakota. This funding would support North Dakota through 1) exploratory research, 2) ready access to EERC experts to address critical state needs in a timely manner, and 3) education and outreach throughout the state to advance North Dakota's critical role.

Exploratory research funding would allow us to unlock new methods, technologies, and analytical techniques. Some of the most exciting areas of opportunity include 1) techniques to understand how Bakken reservoir and source rock could be better understood and manipulated for EOR in the future, 2) methods of using wind energy to produce commodity products instead of electrons, and 3) the use of artificial intelligence and machine learning to enhance our electric grid. Once these research efforts are shown to have merit and opportunity, they would move toward commercialization through conventional applied research funding mechanisms, such as the Oil and Gas Research Program, the Lignite Research Program, or the Renewable Energy Program and the U.S. Department of Energy.

Access to EERC experts on a timely basis would allow us to rapidly and efficiently serve the state of North Dakota when topics such as Bakken oil volatility, carbon taxes, and gas flaring arise, as they have in the past. As an example, when the issue of Bakken oil

volatility was in the national press almost daily, the EERC was not able to support or engage for over 9 months because no funding mechanism was available. It should be noted that the funding eventually provided for Bakken oil volatility research specifically required zero industry match to avoid any perception of industry influence in the results.

Education and outreach in North Dakota are critical if we as a state are going to maintain our role as energy leaders. The State Energy Research Center will team with other North Dakota higher education institutions to involve students, inform the public on current operations and practices, and educate the public on the new technologies and methods on the horizon. Additionally, experiential learning opportunities for students create more engaged students, causes greater student retention, and produces a better workforce, ultimately developing the energy leaders of the future.

In summary, the EERC has demonstrated that we are a critical component advancing energy for the state of North Dakota, the industries and utilities operating in North Dakota, and the citizens of North Dakota. We are asking for your support of SB 2249, providing us the opportunity to enhance our service to North Dakota through the establishment and funding of the State Energy Research Center. Although the return on investment of this funding may be difficult to quantify, as evidenced by past performance, the benefits of these efforts will be orders of magnitude greater than the investment.

Thank you for the opportunity to provide comments today, and thank you for your consideration of SB 2249.



Testimony of Mason Sisk
Economic Development Association of North Dakota
In Support of SB 2249
March 5, 2019

Chairman Delzer and members of the House Appropriations Committee:

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March 5, 2019

Testimony in Support of Senate Bill 2249

Submitted on Behalf of the Lignite Energy Council

House Appropriations Committee

Chairman Delzer and Committee Members,

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