

DR. SOCOLOW: GOOD MORNING.

5 THIS IS MY SECOND SHOT AT YOU, AND THIS IS  
6 ONE WHICH IS GOING TO TAKE THE FORM OF MY INTRODUCING  
7 YOU TO FOUR EXTREMELY INTERESTING PEOPLE, WHO I HAD  
8 THE HONOR TO CHOOSE FOR THIS PROGRAM; AND WHAT WAS IN  
9 MY HEAD WAS TO GIVE YOU A SENSE OF THE ACTION SIDE OF  
10 THIS BUSINESS, THE HUMAN ACTION SIDE OF THIS  
11 BUSINESS. THE NEXT TWO SESSIONS ARE TWO TALKS EACH,  
12 WITH A DISCUSSION PERIOD AT THE END OF EACH, AND THE  
13 FIRST PAIR I CALL CANONICAL MITIGATION -- I WILL  
14 EXPLAIN THAT IN A MINUTE -- AND THE SECOND PAIR ON  
15 GEOENGINEERING.

16 CHUCK KUTSCHER AND JULIO FRIEDMANN HAVE  
17 JUST BEEN INTRODUCED TO YOU.

18 I HAVE BEEN BELABORING THIS POINT, AND I  
19 HAVE ONE MORE TIME TO TELL IT TO YOU: THAT THERE IS  
20 ESSENTIALLY IN MY MIND, ANYWAY, A NEW MANDATE FOR  
21 IPCC AND FOR THIS WHOLE COMMUNITY AS WE LOOK FORWARD  
22 BEYOND, INTO THE FIFTH, SIXTH, AND SEVENTH ASSESSMENT  
23 REPORTS.

24 FOR WORKING GROUP III, IT'S FOR MODELING OF  
25 ALTERNATIVE CARBON-UNCONSCIOUS WORLDS AND

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1 PRICE-RESPONSIVE CHANGES IN THESE WORLDS, BASICALLY  
2 ECONOMIC MODELING, TO THE ENGINEERING OF  
3 CARBON-CONSCIOUS WORLDS.

4 FOR WORKING GROUP II, FROM IMPACTS UNDER  
5 BUSINESS AS USUAL, UNDER NO ACTION, WHICH IS WHAT A1,  
6 A2, B1, AND B2 ARE ALL ABOUT. THESE ARE WORLDS IN  
7 WHICH THERE IS NO CARBON RESPONSE IN THE SOCIETY, BUT  
8 OTHER THINGS ARE DIFFERENT, TO IMPACTS IN A WORLD  
9 WHERE CARBON IS MANAGED.

10 AN ADAPTATION ANALYSIS, IT SEEMS TO ME, HAS  
11 TO HAVE A HOME IN IPCC; AND IT'S NATURAL TO SAY WHAT  
12 ARE THE IMPACTS AND WHAT ARE THE ADAPTATIONS TO THE  
13 IMPACTS. AND THAT WILL, MY GUESS, BECOME A LARGER  
14 AND LARGER FRACTION OF THAT WORLD.

15 AND THEN FOR WORKING GROUP I, WHERE MOST OF  
16 YOU SIT, NOT ALL OF YOU, SUPPORT FOR THE NEW  
17 QUESTIONS ASKED BY WORKING GROUP II AND WORKING  
18 GROUP III. I THINK, IN MY SENSE, WE'RE TURNING A  
19 CORNER AROUND NOW; AND MY WORKING HYPOTHESIS IS THAT  
20 ENVIRONMENTAL SCIENCE WILL BE ESSENTIAL FOR THE  
21 EVALUATION OF SOLUTIONS TO GLOBAL WARMING. AND THIS  
22 NEW TASK CAN AND SHOULD JUSTIFY A SIGNIFICANT  
23 EXPANSION IN THE OVERALL LEVEL OF SUPPORT.

24 I'M GETTING SOME APPLAUSE IN THE FRONT.  
25 I HAD SEEN THIS SLIDE VERY QUICKLY IN

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1 READING SOMETHING A COUPLE OF WEEKS AGO, AND I WENT  
2 AND FOUND IT BECAUSE I REALIZE IT TELLS THE STORY I  
3 WANT TO SAY BETTER THAN MANY. THIS IS THE U.S.  
4 DEPARTMENT OF ENERGY ACKNOWLEDGING ITS VERSION OF  
5 THIS NEW TASK. MANY OF YOU RECOGNIZE THE LEFT HAND  
6 WRE STABILIZATION SCENARIOS THAT ARE ABOUT 15 YEARS  
7 OLD NOW, OR 10 YEARS OLD ANYWAY, AND THE  
8 CORRESPONDING CONCENTRATIONS REACHING STABILIZATION

9 GOING OUT 300 YEARS; AND THE ORANGE BAND BRACKETS,  
10 THE 650 AND 750 STABILIZATION SCENARIOS; AND THE  
11 450/550 SCENARIOS BRACKET THE LIGHT GREEN BAND. AND  
12 THOSE RED ARROWS ARE DOE'S WAY OF SAYING: WHAT DO  
13 YOU THINK ITS JOB IS AFTER ALL, WHICH IS TO NOT  
14 ACCEPT THE 650/750 WORLD, AND THROUGH ITS REVISED  
15 MANDATE, MAKE THE OTHER BAND COME TRUE. THIS IS IN  
16 2007, AND AT DOE. ITS ANALOGUE, AT SOME LEVEL, IS  
17 WHAT I'M TRYING TO SAY HAS TO BE SOMEHOW FIT INTO  
18 YOUR WORLD. BECAUSE 650/750 MEANS NOT DOING VERY  
19 MUCH NOW. AND THEN THEY DRAW THIS YELLOW BAR,  
20 VERTICAL BAR, BETWEEN 2015 AND 2040, AND THEY CALL  
21 THAT THE RELEVANT PLANNING WINDOW. IT SEEMS TO ME  
22 THAT'S ABOUT THE STORY THAT I'M TRYING TO TELL YOU  
23 THROUGH THE NEXT FOUR TALKS; WHAT'S GOING TO GO ON IN  
24 THIS RELEVANT PLANNING WINDOW AND THEN FOR YOU TO ASK  
25 YOURSELVES WHERE DO WE FIT IN.

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1 I USE THE PHRASE "CANONICAL MITIGATION  
2 INITIATIVES." THIS DART BOARD IN THE "SCIENTIFIC  
3 AMERICAN" ARTICLE THAT I HANDED OUT YESTERDAY SHOWED  
4 THE 15 CANONICAL MITIGATION INITIATIVES THAT STEVE  
5 PACALA AND I PUT INTO OUR INITIAL WEDGES PAPER,  
6 BASICALLY SUMMARIZING WHAT EVERYBODY WAS SAYING WERE  
7 THE THINGS YOU COULD DO NOW. YOU COULD DEAL WITH  
8 EFFICIENCY IN SEVERAL WAYS, AND WE ONLY LISTED A FEW.  
9 AND THAT ISN'T -- YOU COULD DEAL WITH THE POWER PLANT  
10 ITSELF, REPLACING COAL WITH GAS OR MAKING THE COAL  
11 PLANT MORE EFFICIENT. YOU HAD CARBON CAPTURE AND  
12 STORAGE OPTIONS. YOU HAVE NUCLEAR POWER, WHICH IS  
13 NUMBER 9 ON THAT LIST. YOU HAD VARIOUS KINDS OF  
14 RENEWABLE ENERGY, BOTH AS FUELS AND FOR POWER. AND  
15 THEN YOU'VE GOT THE MANAGEMENT OF THE BIOSPHERE  
16 ITSELF TO INCREASE THE STORED CARBON. AND THAT'S THE  
17 AGENDA THAT IS BEING PICKED OVER, AND I SAY THAT'S  
18 THE CONSERVATIVE AGENDA, IF YOU LIKE.

19 WITHIN THAT I HAD TO MAKE CHOICES IF YOU  
20 WERE GOING TO HAVE JUST TWO TALKS, AND I CANNOT  
21 REALLY JUSTIFY EASILY TO YOU THAT I PICKED THE  
22 RENEWABLES WORLD AND THE CARBON CAPTURE AND STORAGE  
23 WORLD RATHER THAN THE EFFICIENCY WORLD OR THE NUCLEAR  
24 WORLD OR THE MANAGED BIOSPHERE WORLD. THEY ARE TWO  
25 OUT OF FIVE, BUT I DO THINK, IN FACT, THESE ARE THE

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1 TWO THAT YOU NEED MOST TO UNDERSTAND; AND THERE'S  
2 SOMETHING SENSIBLE TO BE SAID ABOUT THE FACT THAT I  
3 HAVE CHOSEN SOMEBODY SENSIBLE TO SAY SOMETHING ABOUT  
4 IT.

5 SO YOU'RE GOING TO HEAR FROM CHUCK KUTSCHER  
6 REPRESENTING WEDGES 10 THROUGH 13 FIRST; AND THEN  
7 FROM JULIO FRIEDMANN, REPRESENTING WEDGES 6 TO 8  
8 SECOND.

9 AND SO, FINALLY, THINK ABOUT WHERE YOU FIT  
10 IN. RENEWABLES AT VERY LARGE SCALE, NOT A FEW, VERY  
11 LARGE -- IT'S A VERY, VERY LARGE PRESENCE ON THE  
12 LANDSCAPE OF ONE OR ANOTHER OR SEVERAL RENEWABLE  
13 ALTERNATIVES.

14                   HOW WILL WIND HARVESTING CHANGE THE  
15   ATMOSPHERIC BOUNDARY LAYER? THAT'S A QUESTION THAT  
16   DAVID KEITH, ON THE SECOND PANEL, BROUGHT FORWARD,  
17   AND SOME OTHERS, TOO, OVER THE LAST SEVERAL YEARS.  
18   HOW GOOD ARE YOUR MODELS OF DEALING WITH THAT, THE  
19   CLIMATE MODELERS? THE ANSWER IS NOT VERY GOOD.  
20                   HOW WILL THE MAXIMIZATION OF BIOMASS YIELD  
21   ON THE PLANT AFFECT THE NITROGEN CYCLE?  
22                   THESE ARE THE KINDS OF QUESTIONS THAT ARE  
23   NOT NOW, I BELIEVE, IN THE MANDATE THAT YOU PERCEIVE.  
24   IF I'M WRONG, GLAD TO KNOW THAT EVENTS HAVE OVERTAKEN  
25   MY OWN VIEW.

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1                   AND FOR THE CARBON CAPTURE AND STORAGE TALK  
2   BY JULIO, CAN CARBON TRACKER DETECT CO2 LEAKS? WE'RE  
3   GOING TO BE PUTTING BILLIONS OF TONS OF CO2 BELOW  
4   GROUND IN SMALL NUMBERS OF PLACES, WHICH ARE GOING TO  
5   BECOME POTENTIAL POINT SOURCES OF CO2. THE WHOLE IDEA  
6   IS THAT THEY NOT BE POINT SOURCES OF CO2, BUT WE WILL  
7   NEED MONITORING TO VERIFY THAT THEY AREN'T. AND SLOW  
8   LEAKS COULD BE COMPLETELY INNOCUOUS, BUT THEY WILL  
9   AFFECT THE INVENTORIES, AND WE NEED TO KNOW THAT  
10  THEY'RE HAPPENING. AND WHO'S GOING TO DO THAT? I  
11  THINK YOU GUYS ARE GOING TO DO THAT.

12                   SO I WOULD NOW LIKE TO PASS THE PODIUM TO  
13  CHUCK KUTSCHER, WHO I GOT TO KNOW IN 2006, WHEN HE  
14  WAS THE EMPRESARIO OF ONE OF THE MOST AMBITIOUS AND  
15  SUCCESSFUL MEETINGS TO DESCRIBE THE RENEWABLE ENERGY  
16  AGENDA TO THE WORLD. IT WAS CALLED "SOLAR 2006." IT  
17  WAS RUN IN DOWNTOWN DENVER, AND HE WAS THE GUY WHO  
18  MADE IT HAPPEN. HE'S WRITTEN SEVERAL PAPERS  
19  SUMMARIZING THAT MEETING AND IS AS CAPABLE AS ANYONE  
20  I KNOW OF GIVING YOU AN OVERVIEW OF THE RENEWABLE  
21  ENERGY DEPLOYMENT AGENDA.

22                   THANK YOU.

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