

- Title slide #1 – Each May 1 both Appalachian Power and Dominion are required to file an integrated resource plan (IRP) with the Virginia State Corporation Commission (SCC). The plans are based on historic and current data to project how each company plans to supply the capacity and energy their customers will need over the next 15 years (2016 – 2031). Most of the slides I'll share today are from our most recent IRP filed May 1, 2017. Except this next one.....
- Slide 6 (titled Decline in electricity demand) – (I brought up my next to last slide) – This illustrates that Appalachian Power is actually in a period of decreasing load. Here is a comparison of June 2016 load by category vs June 2017. We are down in all categories of customer except “other retail” where we apparently are doing okay with street lights. The declining load is the case for both West Virginia and Virginia. The bottom line to declining load is that we don't need to build base load generation. We are already a little long on generating capacity while at the same time short on energy. We'll talk more about that on our next couple of slides. For now, here are some reasons for our declining load: our service territory has seen little recovery from the 2008 recession. We lost substantial industrial load most recently in the mining sector, coal mining load is down by about 30% over the past few years. Energy efficiency is also having an impact. Every time someone replaces HVAC or big appliances chances are they're doing so with one that is more energy efficient. Electric load is down across the country except in 2 or 3 markets. Dominion is fortunate to serve one of markets, northern Virginia. Electric load grew at about a 7% annual rate through the 1950's and 60's, during the 70's, 80's and much of the 90's growth fell to about 2% annually and has gradually decreased since to current negative 1 – 2%. A recent study indicated most of the load growth stagnation (90%) comes from more efficient lighting like compact fluorescents and LED's. If lighting is in fact the reason perhaps we are seeing the bottom of load decrease because lighting is fairly easily and cheaply replaced compared to HVAC and major appliances which people tend to only replace only when their old one fails. Another minor but growing factor in our decreasing load stagnation is customer switching to competitive service providers and distributed generation, mainly rooftop solar.
- Slide #2 – Here's a look at Appalachian's capacity mix comparing 2012, 2017 and forecasting 2031. We're required to have enough capacity to serve our customer's peak load which for us is typically a Monday morning in January or February when the temperature is down under 10 degrees. We're also required to have a reserve margin of about 16% as determined by a PJM formula. The most obvious thing you'll note on this slide is that coal decreases steadily over the 15 year period from 74% to 51%. Another notable point is natural gas jumped up to 15% of capacity in 2012 with the addition of our Dresden units and the Ceredo peaking units. Gas climbs up to 19% in 2017 because of the conversion of 2 coal units at Clinch River to natural gas. Gas backs down to 11% in 2031 because the Clinch units are projected to permanently close in 2026 or so. The real growth area in our capacity mix is projected to be wind, solar, energy efficiency and demand response which by 2031 are projected to meet almost 30% of our capacity requirement.

- Slide #3 – Now for the rest of the story. Here’s a similar slide showing our energy mix for the same period, 2012, 2017 and 2031. You’ll see that coal will continue to meet most of the energy needs of our customers, falling from 74% in 2012 only to 70% by 2031. To help you understand the difference between capacity and energy I’ll use a Wal-Mart analogy. When you go there to shop notice they have about 25 cash registers but depending on the number of customers only 3 or 4 may be open. The total number of registers equals their capacity; the actual number of customers equals their energy requirement. Most days they only need part of their capacity because customers are relatively low but then at Christmas and a few other times they don’t have enough registers so the lines back up. One of the big differences for us is our capacity must instantaneously and exactly match what our customers consume. A couple of other things you may want to note from this slide are wind, solar and energy efficiency provide a growing portion of our energy supply. Also note that natural gases part actually decreases, again reflecting the 2026 closure of the 2 units at Clinch River converted to gas.
- Slide #4 – Here’s another look at the energy we’ll supply over the next 15 years or more specifically the fuel source for that energy. Again, even though coal does decrease you can see it remains as the principal fuel source. The other 2 fuels you see growing substantially are natural gas and wind. Also note the black line starting at 35,000 GWH on the left and slightly inclining as you move right. That shows we project very slight load growth over the 15 year period.
- Slide #5 – Here’s the levelized cost of generation if you were building any of these new today. By that I mean the all in cost per megawatt hour including capital, O&M and fuel. As you can see the lowest priced options today are wind, combined cycle natural gas and solar. Yes, these numbers do include the tax incentives available for wind and solar. The number in the right most column show the capacity factor for each, that’s basically the amount of time you can expect each to operate and provide energy. Remember when at the beginning I said we can meet our capacity requirements but we’re short on the amount of energy we can supply. That’s because sometimes our units can’t run because of planned and sometimes unplanned maintenance requirements. Wind and solar don’t give you nearly as much capacity as the others but they do provide energy. That’s the only generation we project adding over the next 15 years based on what we know today. Another factor supporting wind and solar build is both can be added in much smaller increments which means much less expensively.
- Slide #6 – Now back to where I started; the story for us is flat to declining demand. We support energy efficiency, we support renewables and we continue to support fossil fuels. But with no or very small growth projected we only plan to add incremental wind, solar and some storage (batteries) between now and 2031. Keep in mind this is all based on crystal ball stuff. None of us know the future and things can change. Certainly we intend to do our part to help grow jobs and commerce in our territory and with that will come improved load growth.
- Slide # 7 - Questions?