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E-2 Sub 1150

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6 Jun. 2018

Clerk's Office  
N.C. Utilities Commission

From: Oliver L. Canaday, 713 Camellia Ave., Panama City, FL - 32457  
(Pertains to small farm on/at 909 Parker Town Rd., Four Oaks, N.C.)

→ To: N.C. Utilities Commission, (Attn: Daniel G. Clodfelter) 430 N. Salisbury Street, Dobbs Building, Raleigh, N.C. 27699 -9001

Robert W. Kaylor, Esq., 353 E. six Forks Road, Suite 260, Raleigh, N.C. -27609

Ref: (a) Application of Duke Energy Progress, LLC (DEP) for Certificate of Environmental Compatibility and Public Convenience and Necessity (CPCN) to Construct Approximately 11.5 Miles of New 230kV Transmission Line in Johnston County, N.C.; via Docket No. E-2, Sub 1150 of 14 July 2017 & to Include Information from 24 July 2017 Giving Update/Correction to DEP's Revised Exhibit A, pp. 4-24 and 4-25 to Application

- (b) N.C. Utility Commission Order Granting Certificate to DPE for CPCN of 12 Jan. 2018 (pertains to Docket No. E-2, Sub 1150) (page 3, para. 7: 5 Dec 2017 closed for new evidence) (Unauthorized DEP- Late-Filed Exhibit No. 2 - Cost Comparison of Routes 31, 4, 32, and 1 filed 13 Nov. 2017 - \*referenced "Order" page 3, para. 8; part of burden of proof G.S 62-105 (a) (3) Cost)
- (c) G.S. 62-2 Declaration of policy. (a), (4a) "To assure...lower rates over operating life lives of such new facilities..." (duplicate)
- (d) G.S. 62-2. Declaration of policy. (a), (4a) "To assure...lower rates over the operating lives of such new facilities..." (duplicate)
- (e) Article 5A., 62-100. Definitions, Siting of Transmission Lines; (4) -"The word" lines" means distributions lines and transmission lines collectively".
- (f) G.S. 62-105. Burden of proof; decision; -The burden of proof is on the applicant...(a) **cost of -Construction, Operations, and Maintenance;** - (reference (b) crossed referenced with reference (k) shows Late-Filled Exhibit No. 2 was not authorized in transcript with Line parallel to 500kV line)
- (g) N.C. Public Staff Utilities Commission letter to Chief Clerk, N.C. :Utilities Commission Letter of 16 Oct. 2017
- (h) Landmark U.S. Supreme case, "Federal Power Commission et al v. Hope Natural Gas Co. ("Hope") 320 U.S. 591, 603 (1944); -..."Regulated utilities are entitled to a reasonable opportunity to recover their prudently - incurred cost."
- (i) Landmark U.S. Supreme case, Bluefield Water Works and Improvement Co. v. Public Service Commission of West Virginia ("Bluefield") 262 U.S, 679 (1923), .."Regulated utilities are entitled to Earn a fair and reasonable rate of return on

their capitol investment.

- (j) N.C. Utilities Commission **Mission Statement** via N.C. state via Law (G.S. 62), **"must"** regulate in a manner designed to implement the policy of the State of North Carolina: -(there are 11 bullets, short direct statements of "issues" to **"must"** regulate to implement policy, see enclosure (2)
- (k) IN THE MATTER OF, Commission Hearing of 31 Oct. 2017, Dobbs Building, Raleigh, N.C., for Docket No. E-2, Sub 1150, Time: 9:45 A.M. TO 1229 P.M. -(Record Transcribed in Docket No. E-2, Sub 1150
- (l) G.S. 62-90. Right of Appeal; filing exceptings (within 30days) (Order Denying Motion for Reconsideration date of 7 May 2018, must reply NLT 7 Jun 2018)

Encl: (1) Ohm's Law info, moving electric, distribution, Resistance, Resistivity & Conductivity

(2) N.C. Utility Commission Mission Statement; 11 bullets, date as of 30 May 2018

(3) Pie Chart, via Connecticut Siting Council, showing Life-Cycle Cost 2012 with criteria/components identified for a 40 Year Life Cycle Cost PV = \$12,965,402. per mile of line - for: Overhead 345 kV Transmission Line, Distribution of Life Cycle Cost Elements, Energy Cost: 4.8 cents/kWh;-(CT. Siting Council seems to be opposite number to the N.C. Utility Commission for authority & mission) w/ Reliability

(4) Definitions of Legal Terms, (needed and used to understand terminology in correspondence - for Intervener's reference)

(5) Pictures of 230KV line with business ahead

Subj: -**Objection** to Order Denying Motion for Reconsideration, (Order was not with Prejudice);

- **Intervener Motions, via Good Cause**, for 2<sup>nd</sup> Reconsideration (with a Hard Look) "at Uncontroverted Substantive and Objective Evidence (some **\*Fresh Evidence\*** and Newley. Acquired Evidence) to Support Route 4 to Support Electric Service to Cleveland Area with More Reliable, More Economical (less cost) over Life of Line

-- In accordance with reference (l) Subject Motion is submitted with Uncontroverted Evidence, some Fresh Evidence and New Evidence showing DPE has not met Burden of Proof for cost and other requirements by G.S. --as listed. Intervener Prays Commission gives a Hard Look at Evidence.

-- Intervener is a property owner, and DPE Rate Payeer with two accounts, numbers 034 176 4413 and 667 764 2578 (redact numbers if needed to post on Docket No. E-2, Sub 1150.

(DPE was not forth-coming to show cost/cost comparison of the alternative routes prior to the 31 Oct. 2017 Hearing, this cost was admitted to record **unauthorized** after the hearing in a Late Exhibit. The only issue Intervener knew about to be submitted in Late -Filed Exhibit was information pertaining to 500kV parallel ROW with 230kV line. Intervener was not aware of the Commission's authorizing submission of the Cost Comparison at the end of the Hearing, see reference (k). Pages 153 – 157; -there was conversation exchange between Commission and DPE- Mr. Somers, start on page 154, lines 5 -24, and page 155 lines 1-24, continues on to page 156, lines 1-8 -the subject is about terms of right-of-way and - - - , Mr. Same testified about some of that, but I think a little more detail about that might be of interest. Line 6, DPE-Mr. Somers: Sure be glad to. **\*\*To Interveners' knowledge nothing was stated by Commission or DPE-Mr. Somers about a Late Filing of Exhibit- of-Comparison Cost of 4 alternative lines after the 31 Oct. 2017 Hearing. The commission did not authorize the late submission showing Cost Comparison of 4 routes. (Further more, the Fresh Evidence submitted by DPE does not present Operating Cost and Maintenance cost for Life-Cycle of Route 31 and Route 4, (enclosure (3) example is 40 years) as required by references (c) and (f). -Intervener presents this UNCONTROVERTED EVIDENCE showing/ demonstrating unauthorized evidence has been used in Order approving reference (a) and present that DPE has not met Burden of Proof for cost, DPE gives cost of construction with Late-Filed exhibit but does not show Operating cost and Maintenance cost as required by references (c) and (f); and includes reference (g) used in reference (b).**

The cure to this issue is via Commissions' authority to change the Order Route 31 to Route 4 the best route to deliver: economical, reliable, long term electric service to the Cleveland area. Reference (a) prepared by Burns and McDowell Engineers and DPE Engineers states the final four routes considered are feasible to supply electricity to Cleveland area, therefore, Route 4 is as qualified for the Preferred Route as Route 31.

-Intervener has several Motions to Compel DPE to deliver information for decision making, to Commission & Intervener, for Preferred Route, (Line, to Cleveland area); -This Information will Show Uncontroverted Evidence: --Route-4 is Best Route to Deliver Electric Service, -and Application is Flawed via Content, -and Change the Circumstances, (via Information), -to Require Modification of Route to Delivery Electric Power to Cleveland area, and Cause Rescission for the Public Interest via Life-Cycle Cost Comparison; **\*\* (The Connecticut Sitting Council uses the term "Life-Cycle Cost" for a typical Overhead Transmission Line, illustration is 40 years, see enclosure (3)); reference (d), G.S. 62-2, (a), (4a) refers to this issue as, "...lower rates over the operating lives of such new facilities"...).** - To best of Interveners knowledge this **Operating Lives cost is not in reference (a)**, and is needed per references (d) and (f). DPE must comply with Declaration of Policy for Cost Comparison for transmission line selection in best interest of N.C. Rate- Payees, Consuming Public. (What is easily overlooked is capitol out-lay cost (is one time), the operating of the line cost is hourly, daily, etc. - it turns out to be a Hugh cost paid to utility companies over life of line. (Reference (h) and (I) is used to insure Public Utilities are funded to pay bills and shareholders.

1. This Objection is not frivolous; Intervener's mission is to get information that has not been forth-coming from DPE for Intervener, and Commission and provide via Uncontroverted evidence that

Route 4 is Best Route to deliver electric service to Cleveland area.

a. **Motion to Compel** DPE statement/reason -how/why DPE withheld Cost Comparison of Routes 31, 4, 32, and 1 in Application of 14 Jul. 2017 from Intervener and Rate Paying Public until after the Hearing, 31 Oct. 2017. (Public Staff sent their endorsement to approve o/a 2 weeks before.) This is critical information for decision making by Commission, Public Staff, and Intervener and other interested parties/N.C. Rate-Payers. (To the Intervener, this Cost Comparison of the four routes estimate was paramount to identifying Route-4 as Best Route to deliver electric power to Cleveland area.)

b. **Motion to Compel** DPE to provide Life-Cycle Cost for a Typical 230kV Overhead Line/s via cost per mile. -Would not expect the elements/ criteria to be identical but similar. Intervener believes a total-cost-analysis is done by DPE with similarly elements each time requesting a rate increase. (Rate increases would be for total cost of doing business - return on capital, pay employees, & pay the share holders' dividends & etc.). (Intervener has not found this info, & is needed to show cost passed on to the N.C. rate payers for electric service, annually to compute DPE's Life-Cycle cost estimate for Route-31 o/a 11.5 mile and Route-4 o/a 6.23 miles over the Life-Cycle of Line. -Information, Intervener knows the **major-cost of Transmission Lines is not necessarily construction cost** to N.C. Rate-Paying consuming public, but **cost of operation/running/losses of electric power from Point of Power-Generation to end-user/N.C. Rate-Payer, who pays for all the used and loss power. Per this case, choice of approving a longer route 31 (almost twice as long) over shorter route 4 which is more economically.** There is a Noticeable Loss of Energy over Distance (see enclosure (1) info on Ohm's Law), (DPEs' engineers must know this) and the N.C Rate Payers pay the additional cost for Life-Cycle, (example shown is 40-years, see enclosure (3)). The choice of Route 31 a longer route and cost of operation is passed-on the N.C. Rate-Payer and is not

necessary when Best Route-4 is used.

c. **Motion to Compel** DPE provide record (receipt) of U.S. Certified Mail to: Roy Massengill and or Alberta Sue M. Massengill, 1266 Elevation Road, Four Oaks, N.C. 27524 o/a 20 April 2017; pertains to notification via DPE by authority of N.C. G.S. 40A-11 to enter property to make surveys, soil boring, appraisals and assessments of property.

d. **Motion to Compel** Public Staff to provide document, record of reasonable cost of Route-31 in letter of 16 Oct. 2017, complying with requirements of G.S. 62-102. -States , when compared with reasonable alternative courses of action, construction of the line in proposed location is reasonable; that the estimated cost associated with the line are reasonable. Intervener has not found this estimated cost in Docket No. E-2, Sub 1150.

e. **Motion to Compel** DPE provide definition of business as used in reference (a). (During the 31 Oct. 2017 Hearing, this definition was not completed due to DPE objection. Intervener believes a definition "**must**" forth-come from DPE as results from this Hearing and process via Docket No. E-2, Sub 1150 is to be used to condemn my land and taken for Right of Way (ROW).

(intervener has identified legal definition of business as: "-any activity or enterprise entered into for profit. It does not mean it is a company, a corporation, partnership, or have any such formal organization, but it can range from a street peddler to General Motors."  
( <https://legal-dictionary.thefreedictionary.com/business>)

-Also, further more: Small farms Ag Policy – NC Department of Agriculture definition of a farm. "A farm is a tract of land cultivated for the purpose of agriculture production. A farm is classified of having \$1,000.00 or more of agricultural products being produced...or sold."  
( [www.ncagr.gov/SmallFarms/FAQs.htm](http://www.ncagr.gov/SmallFarms/FAQs.htm)) (small family farms/business ore on Route 31)

and cropland definition – NRCS – USDA: "**Cropland includes areas used for the production of adopted crops for harvest. ...Cultivated cropland comprises land in row crops or close-grown crops and also other cultivated cropland, for example, hay land or pastureland that is in a rotation with row or close-grown crops.**" (a business is usually associated with production of something)  
(<https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/landuse/crops>) Intervener can connect the dots for definition of business: Business activity, Farm Land producing \$1000.00 or more products...or sold, and Cropland cultivated comprised of, example: row crops, hay land, pastureland and etc. Preferred Route-31 to best of my knowledge crosses cropland making-up the business, (farm/cropland) in DPE's proposed ROW of 11.5 miles: Route 31 crosses

several small business by Interveners definition. Intervener Motions to Compel the farms, unit/acres be weighted and computed as business. Also, Intervener Motions to Compel the Public Staff to ride DEP's (investigate) route 31 to verify the business on the route. My 25 acres maybe the smallest farm on Route 31, and my income from the farm on 909 Parker Town Road, Four Oaks, N.C. exceeds \$1000.00 a year.

f. **Motion to DPE** to Compel weight criteria (1-5) that gives residence proximity a weight of 5 .

Reference (k). questions to DPE- Mr. Same via Commissioner Beatty Page 79, line 5 thru page 82, line 8. The questioning determines the weight of 5 was given to residences (via promimity only) to guide the preferred route 31 thru rural cropland used for farming (agri- business) that provide income for farmers to make a living, not on any kind of merit. DPE gives all kinds of criteria advantages for using Route 31 v. no criteria for Route 4, this not reasonable.

2. **In "Interest of Consuming Public"** Intervener prays Commission allows the information

Discovered via references (h) and (i) be used in this Objection. These are Land Mark Supreme

Court cases that ruled:

a. ("Hope") -Regulated utilities are entitled to a reasonable opportunity to recover their prudently – incurred cost. (Choosing Route 31 at o/a 11.5 mile v. Route 4 at o/a 6.23 miles and the N.C. Rate Payers paying an additional cost of \$543,153.00 is not prudent. DPE and Commission refers to this fact as a **"MERE DISAGREEMENT"** ; -Intervener nor anyone he knows considers \$543,153.00 a mere amount of money.

b. ("Bluefield") -Regulated utilities are also entitled to earn a fair and reasonable rate of return on their capitol investment. Using Route 4 at o/a 6.23 miles and receiving a reasonable rate of return is in the best interest of N.C. Rate Payers/N.C. Consuming Public for the Life-Cycle of line to Cleveland area. Using Route 31 at o/a 11.5 miles (difference of o/a 5.27 miles) will require t;he N.C. Rate Payers pay a Hugh-Sustainable amount for electric service over Life-Cycle of line. This will show with receipt of DPE's Life-Cycle cost of line via Compel Order. Intervener will estimate Using enclosure (3) information at 66.6666%. Intervener will show the difference of Life-Cycle Cost between Route-4 and Route-31.

$\frac{230KV}{345kV} = 66.6666\%$ ; \$12,965,402. per mile of line X 66.6666% = \$8,643,592. per mile.

This is rough estimate: Route 31, 11.5 mile X \$8,643,592 per mile = \$99,401,308 life-cycle

Route 4, 6.27 mile X \$8,643,592 per mile = \$54,195,321 life-cycle

The Route-31 life-cycle cost more: \$45,205,987; this is the o/a difference in cost between the two lines. (Intervener knows this is not exact but there are factors that will help with estimate: -CT. sales tax 2% ; N.C. Sales tax 7%,, the larger 345kV lines usually

will not lose as much energy over transmission line as a smaller 230kV smaller line; The warmer weather in N.C, will heat the 230kV line, causing sagging, heat will dissipate making humming sounds, according to Ohms's Law (enclosure (1)) it takes more electric power to push the 230kVs when hot. The N.C. Rate Payers pay for this loss power. CT. shows a loss of 14%, will be interesting to see DPE loss, as we pay for it. "Hope" and "Bluefield" ensures Public Utilities have opportunity to make a profit.

3. Addressing DEP's statement: "...that Mr. Canaday's "mere disagreement" with them is insufficient to warrant the Commission's reconsideration of its order." Intervener objects with prejudice to DPE's allegations via stating the following:

a. (1) "the information contained in DEP's late-filed Exhibits 1 and 2 was considered by the Commission in its January 12, 2018 Order and therefore does not constitute new evidence or a new compelling argument;". Intervener "Objects", with prejudice, to this frivolous argument via the contents of record, reference (k), page 104/159 lines 5 thru 24. Intervener, reads the Commission (believed to be Mr. beatty), questions to DPE witness (believed to be Mr. Same); line 12 Q -"So we we don't know what the cost would have been. Line 13-14 -It would have been a longer line, but you've selected a longer line - -; line 15 A Yes, sir. Line 16 Q - - than the western corridors already - - line 17 A Yes, sir. Line 18-19 Q - - so we just don't know what the cost difference would have been, either, do we? Line 20 A True. Line 21-24 Q Okay. Help me out on the cost difference. I mean, we're - - as a Commission, we're obligated not only to talk about property owners, but also talk about ratepayers. Page 105/169, line 1. A. Yes. (This goes back and forth to line 24, continues on Page 106/159 continues to line 14. Then, Line 15-18/159 Q I apologize to you. I've been doing a lot of reading on this, but I've still got some more to finish. So if it's in here, I may not have found it yet. Are your cost analyses in the record materials? Line 19 A No, sir., Line 20-23/159 Q They've not part of the Burns & McDowell study, I didn't find them in there, and they're not

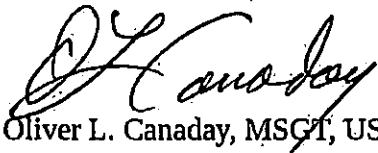
elsewhere in the record on your analysis of the different cost of the different options? Line 24 A No, sir. \*\* There is Uncontroved evidence that the Cost Estimate entered into the Order, reference (b), is new evidence, (not Fresh Evidence). The Late-Filed Exhibit No. 2 showing estimated cost of 4 best scoring routes. It didn't exist until 13 Nov. 2017. The Commission then wrote Order Approving reference (b) as if the information existed via reference (a) since date of 14 July 2017. Intervener believes this an error or oversight and can be cured by Rescinding Order and replacing Route 31 with Route-4 as best Route. (This Order will be used to Condemn my land and paid a so called "Just Compensation".) (Now Intervener has learned a term called **Fresh Evidence** that can be hidden from parties, violating instructions from the Commission. The Commission **must**, via G.S 62-72 compel DPE show authorization for submitting the Fresh Evidence for burden of proof of analysis of construction cost. The record shows that burden of proof has not been met at this time, as DPE has not submitted the Operating cost and Maintenance cost of the Life of the Line via references (d) and (f) which are required for Approval of Order. -Not completing the burden of proof is bases to rescind Order, and Intervener Motions for Commission to rescind "Order" as the burden of proof for estimated cost of line is missing Operation cost, and Maintenance cost. DPE only submitted Construction cost. This is Uncontroveted Evidence that DPE has failed the Burden of Proof for Cost of Operation and Maintenance and warrants rescinding reference (b), "Order".

4. Intervener Motions for the Commission to suspend Order, wait for reply to Motions Compelling DPE and Public Staff to bring forth documents to clarify their actions supporting the Preferred Line. Analysis the Compelled documents for dates, content, and substance, even return back and continue the Hearing with all the information available to both Parties or by authority

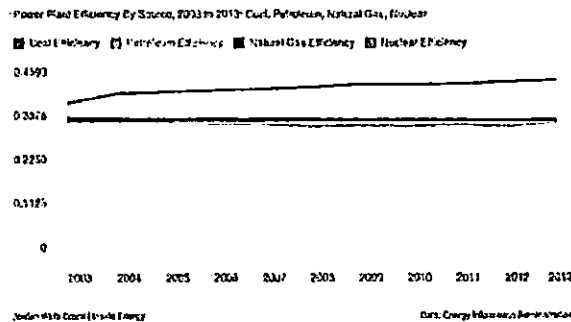


given the Commission rescind "Order" or Order the use of Best Route 4.

Sincerely,

A handwritten signature in cursive script, appearing to read "O L Canaday".

Oliver L. Canaday, MSGT, USMC, Ret. 0441/0331H, -CACw/3 brz-stars, PH, CAR, NUCw2 brz-stars,  
MUC, RVNSw/sil-star, BC, AWC, C&S



This graph shows the heating efficiency of different types of power plants. All types of plants have roughly the same efficiency, with the exception of natural gas, which has seen recent improvements in efficiency in recent years with the addition of combined cycle plants. (The coal efficiency line is nearly identical with nuclear energy, and is swallowed up in the purple).

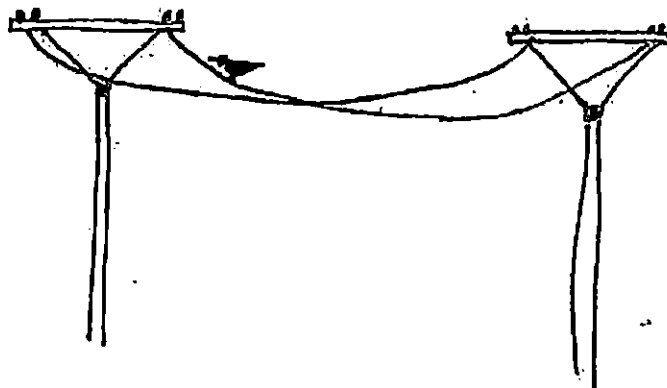
## Step 2: Moving Electricity – Transmission and Distribution

Most of us don't live right next to a power plant. So we somehow have to get electricity to our homes. This sounds like a job for powerlines.

### Transmission

First, electricity travels on long-distance, high-voltage transmission lines, often miles and miles across country. The voltage in these lines can be hundreds of thousands of volts. You don't want to mess with these lines.

Why so much voltage? To answer this question, we need to review some high school physics, namely Ohm's law (<https://www.youtube.com/watch?v=-mHLvtGjum4>). Ohm's law describes how the amount of power in electricity and its characteristics – voltage, current and resistance – are related. It boils down to this: Losses scale with the **square** of a wire's current. That square factor means a tiny jump in current can cause a big bump in losses. Keeping voltage high lets us keep current, and losses, low. (For history nerds: This is why AC won the battle of the currents (<http://www.insideenergy.org/2014/08/22/the-solar-challenge-part-3-an-edison-v-westinghouse-rematch/>). Thanks, George Westinghouse.)



Jordan Wirfs-Brack / Inside Energy

When that electricity is lost, where does it go? Heat. Electrons moving back and forth crash into each other, and those collisions warm up power lines and the air around them.

You can actually hear those losses: That crackling sound when you stand under a transmission tower is lost electricity. You can see the losses, too: Notice how power lines

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The sagging transmission lines from Michigan Electric Disappear Between A Power Plant And Your Plug? Inside Energy  
 Engineers have to make sure they don't get too close to trees and buildings.

Some of that's gravity. But the rest

are electrical losses. Heat, like the kind from lost electricity, makes metal power lines expand. When they do, they sag. Powerlines are saggier, and leakier, on hot days.

### ***Distribution***

High-voltage transmission lines are big, tall, expensive, and potentially dangerous so we only use them when electricity needs to travel long distances. At substations near your neighborhood, electricity is stepped down onto smaller, lower-voltage power lines – the kind on wooden poles. Now we're talking tens of thousands of volts. Next, transformers (the can-shaped things sitting on those poles) step the voltage down even more, to 120 volts, to make it safe to enter your house.

Generally, smaller power lines mean bigger relative losses. So even though electricity may travel much farther on high-voltage transmission lines – dozens or hundreds of miles – losses are low, around two percent. And though your electricity may travel a few miles or less on low-voltage distribution lines, losses are high, around four percent.

***Energy lost in transmission and distribution: About 6% – 2% in transmission and 4% in distribution – or 69 trillion Btus in the U.S. in 2013***

Fun fact: Transmission and distribution losses tend to be lower in rural states like Wyoming and North Dakota. Why? Less densely populated states have more high-voltage, low-loss transmission lines and fewer lower-voltage, high-loss distribution lines. **Explore the transmission and distribution losses in your state on our interactive graphic.** (<http://www.insideenergy.org/2015/11/06/electricity-losses-state-by-state-interactive/>)

Transmission and distribution losses vary country to country as well. Some countries, like India (<http://www.eia.gov/todayinenergy/detail.cfm?id=23452>), have losses pushing 30 percent. Often, this is due to electricity thieves.

### **Step 3: Using Electricity Inside Your Home**

Utility companies meticulously measure losses from the power plant to your meter. They have to, because every bit they lose eats into their bottom line. But once you've purchased electricity and it enters your home, we lose track of the losses.

Your house, and the wires inside your walls, are kind of a black box, and figuring how much electricity gets lost – electricity that you've already paid for – is tricky. If you want to find out how much electricity gets lost in your home you'll either need to estimate it using a circuit diagram of your house or measure it by putting meters on all of your appliances. Are you an energy wonk attempting this? Let us know, we'd love to hear from you!

***Energy lost in the wiring inside your walls: We don't know! It could be negligible, or it could be another few percent.***

### **The Future Of Transmission and Distribution Losses**

Grid engineers are working on technologies like superconducting materials (<http://www.extremetech.com/extreme/182278-the-worlds-first-superconducting-power-line-paves-the-way-for-billions-of-dollars-in-savings>) that could essentially reduce electricity transmission and distribution losses to zero. But for now, the cost of these technologies is much higher than the money lost by utility companies through their existing hot, leaky power lines.

A more economical solution to reduce transmission and distribution losses is to change how and when we use power. Losses aren't a constant quantity. They change every instant based on things like the weather and power consumption. When demand is high, like when we're all running our ACs on hot summer days, losses are higher. When demand is low, like in the middle of the night, losses are lower. Utilities are experimenting

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## Resistance

The electrical resistance of a circuit component or device is defined as the ratio of the voltage applied to the electric current which flows through it:



Resistor

$$R = \frac{V}{I}$$

If the resistance is constant over a considerable range of voltage, then Ohm's law,  $I = V/R$ , can be used to predict the behavior of the material. Although the definition above involves DC current and voltage, the same definition holds for the AC application of resistors.

Whether or not a material obeys Ohm's law, its resistance can be described in terms of its bulk resistivity. The resistivity, and thus the resistance, is temperature dependent. Over sizable ranges of temperature, this temperature dependence can be predicted from a temperature coefficient of resistance.

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## Resistivity and Conductivity

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The electrical resistance of a wire would be expected to be greater for a longer wire, less for a wire of larger cross sectional area, and would be expected to depend upon the material out of which the wire is made. Experimentally, the dependence upon these properties is a straightforward one for a wide range of conditions, and the resistance of a wire can be expressed as

$$R = \frac{\rho L}{A}$$

$\rho$  = resistivity

$L$  = length

$A$  = cross sectional area

The factor in the resistance which takes into account the nature of the material is the resistivity. Although it is temperature dependent, it can be used at a given temperature to

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# North Carolina Utilities Commission

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Chief Clerk's Office  
Hours: 8:00 a.m. to 5:00  
p.m.  
Telephone Number 919-  
733-7328  
Fax Number 919-733-7300

Media/Press Inquiries  
919-715-7057

Consumer Complaints  
866-380-9816  
919-733-9277

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Information

## Welcome to the North Carolina Utilities Commission

**NEW** Revised forms Required for Renewable Energy  
Facility Filings: Effective May 1, 2018, the Commission will  
require the use of the following forms for certain renewable  
energy facility filings:

1. Application for Certificate of Public Convenience and Necessity – Commission Rule R8-64 (for Qualifying Facilities and small power producers)
2. Report of Proposed Construction – Commission Rule R8-65
3. Registration Statement for the Registration of a Renewable Energy Facility or New Renewable Energy Facility – Commission Rule R8-66
4. Annual Certification of Compliance with the Requirements of Commission Rule R8-66 for the Continuation of the Registration of a Renewable Energy Facility or New Renewable Energy Facility – Commission Rule R8-66(b)

For further information, see the Commission's Order Adopting Administrative, Technical, and Conforming Amendments to Commission Rules, issued on March 29, 2018, in Docket No. E-100, Subs 113, 121, and 134.

Anyone planning to electronically file a document in a new docket should fill out the Request to Reserve a Docket Number online form by clicking the button below.

Get Docket # Here

The North Carolina Utilities Commission is an agency of the State of North Carolina created by the General Assembly to regulate the rates and services of all public utilities in North Carolina. It is the oldest regulatory body in state government. The present Commission evolved from the Railroad Commission which was created in 1891 and given authority to regulate railroad, steam boat, and telegraph companies.

Today, the Commission regulates electric, telephone (including payphone service and shared tenant service), natural gas, water, wastewater, water resale, household goods transportation, buses, brokers, and ferryboats. To a limited degree, the Commission regulates electric membership corporations, small power producers, and electric merchant plants. The Commission is also responsible for administering programs in North Carolina to ensure the safety of natural gas pipelines. The Commission does not regulate telephone membership corporations, cable TV, satellite, commercial mobile radio service, cellular, pagers, or data and Internet service providers. For more information about the Commission, visit our History and Description page.

### Mission Statement

The Commission is responsible to both the public and utilities and, by law (G. S. 62-2), must regulate in a manner designed to implement the policy of the State of North Carolina to:

- Provide fair regulation of public utilities in the interest of the public.
- Promote the inherent advantage of regulated public utilities.
- Promote adequate, reliable, and economical utility service.
- Promote least cost energy planning.
- Provide just and reasonable rates and charges for public utility services and promote conservation of energy.
- Assure that facilities necessary to meet future growth can be financed on reasonable and fair terms.
- Encourage and promote harmony between utility companies and their customers.
- Foster planned growth of public utility services.
- Coordinate energy supply facilities with the state's development.
- Cooperate with other states and the federal government in providing interstate and intrastate public utility service and reliability of energy supply.
- Facilitate the construction of facilities in and the extension of natural gas service to unserved areas.

Consumer  
Complaints  
1-866-380-9816 or  
919-733-9277

Consumer  
Statements  
Consumers may email  
comments other than  
complaints to  
statements@ncuc.net

### Commission Calendar

#### Hearings of Interest

Public Hearings 6/5 –  
Duke Energy Carolina's  
Annual Request to Adjust  
Electricity Prices Via Cost  
Trackers

Public Hearings 6/20 –  
Request to Raise Water  
and Sewer Prices in Wake  
County by KRJ Utilities  
Company

Public Hearings 6/25, 6/26  
& 9/10 – Request to Raise  
Water and Sewer Rates by  
Aqua North Carolina, Inc.

Public Hearing 7/18 –  
Request to Raise Water  
Prices in Wake County by  
Prior Construction  
Company, Inc.

### NCUC News

**NEW** Duke Energy  
Progress Rate Order

Fee Changes for  
Renewable Energy  
Facilities

Mandatory 10-Digit Local  
Dialing Is Here for the  
336/743 Area Code (see  
Docket P-100 Sub 137C)

Renewable Energy and  
Energy Efficiency Portfolio  
Standard (REPS)

### Consumer Information

Utilities United Against  
Scams

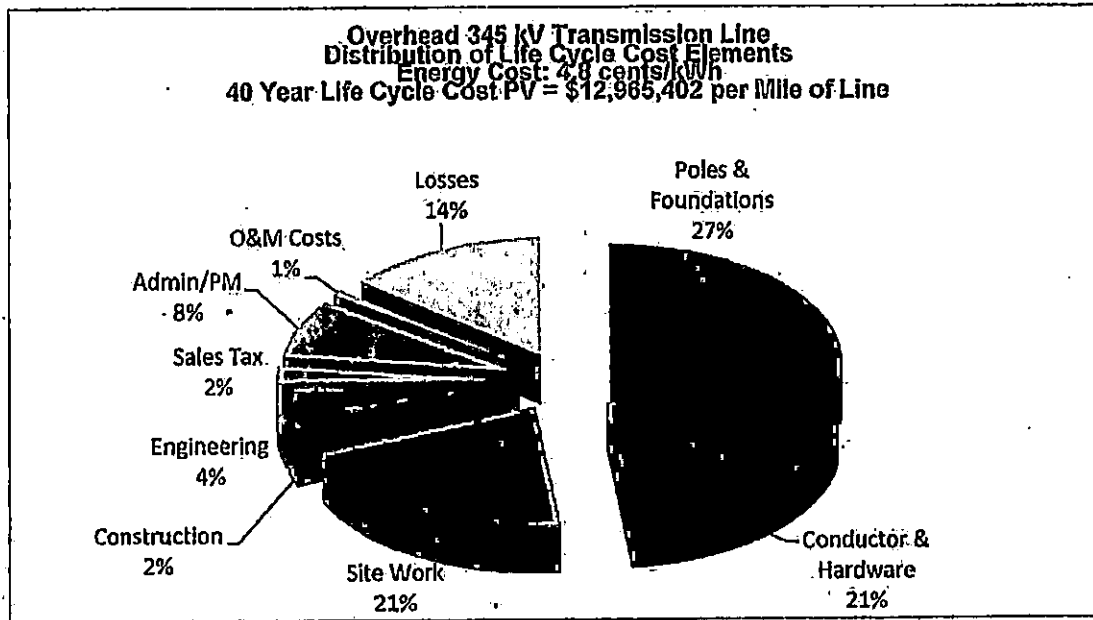
Phone Scams Target Duke  
Customers

MOVE IT Flyer

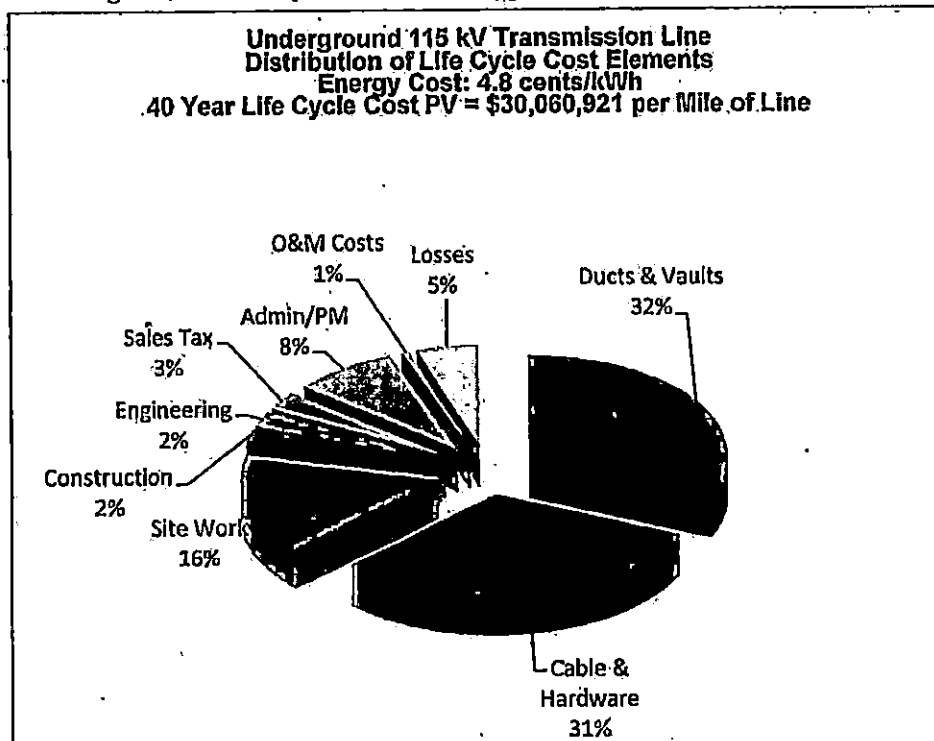
Beware of Unauthorized  
Movers

Unauthorized Movers Risk  
Fines

→ **Figure 1-2: Life-Cycle Costs for a Typical 345 kV Overhead Line**



**Figure 1-3: Life-Cycle Costs for a Typical 115 kV Underground Line**



## STORIES > GOOD TO KNOW

### 8 Common Causes of Outages

June 27, 2016

The reasons for outages can vary, and can affect the length of time it takes to restore service back to your home. Here are some of the most common causes of outages.

1. **Storms:** Wind, heat, ice and snow are the most common causes of widespread power outages.
2. **Trees:** During high winds, or trimming by an untrained professional, limbs can come into contact with power lines and cause interruptions. You can always request a tree trimming service on SCE's website.
3. **Vehicles:** A vehicle collision with a utility pole can cause a power outage.
4. **Earthquakes:** Quakes of all sizes can damage electrical facilities and power lines.
5. **Animals:** Although we place barriers between wildlife and electricity equipment, squirrels, snakes and other small animals may still cause a short circuit.
6. **Lightning:** When lightning strikes electrical equipment, transmission towers, wires and poles, outages can occur.
7. **Excavation digging:** Sometimes, underground cables are disturbed by digging. It's important to call 811 before any gardening or digging project.
8. **High Power Demand:** During heat waves and other times of unusually high power demand, overburdened electric cables, transformers, and other electrical equipment can melt and fall.

**Tags:** outages

**Comments (3)**

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# DEFINITION<sup>s</sup>

## Justice Law and Legal Definition

Justice is the concept of moral rightness based on ethics, rationality, law, natural law, fairness, religion and/or equity. Justice is the result of the fair and proper administration of law. It is the quality of being just; in conformity to truth and reality in expressing opinions and in conduct; honesty; fidelity; impartiality or just treatment; fair representation of facts respecting merit or demerit.

### Cropland - NRCS - USDA

<https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/landuse/crops>

Cropland. Cropland includes areas used for the production of adapted crops for harvest. ... Cultivated cropland comprises land in row crops or close-grown crops and also other cultivated cropland, for example, hay land or pastureland that is in a rotation with row or close-grown crops.

### Business legal definition of business

<https://legal-dictionary.thefreedictionary.com/business>

business. n. any activity or enterprise entered into for profit. It does not mean it is a company, a corporation, partnership, or have any such formal organization, but it can range from a street peddler to General Motors.

### Small Farms Ag Policy - NC Department of Agriculture

[www.ncagr.gov/SmallFarms/FAQs.htm](http://www.ncagr.gov/SmallFarms/FAQs.htm)

A farm is a tract of land cultivated for the purpose of agricultural production. A farm is classified of having \$1,000 or more of agricultural products being produced ... or sold.

Just Cause Law and Legal Definition. Just cause means a legally sufficient reason: ... Just cause, in the employment context, refers to the employer's right to discipline or terminate employees for misconduct or negligence. In many states employers must at least show just cause for terminating you.

### Good Cause Law and Legal Definition | USLegal, Inc.

<https://definitions.uslegal.com/g/good-cause/>

Good Cause Law and Legal Definition. Good cause generally means a legally sufficient reason for a court action or ruling.

### 42 CFR 422.580 - Reconsideration defined. | US Law | LII / Legal ...

<https://www.law.cornell.edu/cfr/text/42/422.580>

prev | next. § 422.580 Reconsideration defined. A reconsideration consists of a review of an adverse organization determination, the evidence and findings upon which it was based, and any other evidence the parties submit or the MA organization or CMS obtains. Hide United States Code.

### Due Diligence Law and Legal Definition | USLegal, Inc.

<https://definitions.uslegal.com/d/due-diligence/>

Due Diligence Law and Legal Definition. Due diligence in a broad sense refers to the level of judgement, care, prudence, determination, and activity that a person would reasonably be expected to do under particular circumstances.

### Adduce Law and Legal Definition | USLegal, Inc.

<https://definitions.uslegal.com/a/adduce/>

Adduce Law and Legal Definition. Adduce means to bring forward; to present; to offer; to introduce. ... in legal context it refers to bring forward in argument or as evidence; to adduce reasons in support of a constitutional amendment.

ENCLOSURE (4)

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# DEFINITION<sup>s</sup>

## Hard-Look Doctrine Law and Legal Definition | USLegal, Inc.

<https://definitions.uslegal.com/h/hard-look-doctrine/> ▼

Hard-Look Doctrine is a principle of Administrative law that says a court should carefully ... Hard-Look Doctrine Law and Legal Definition ... Related Legal Terms.

## Evidence (law) - Wikipedia

[https://en.wikipedia.org/wiki/Evidence\\_\(law\)](https://en.wikipedia.org/wiki/Evidence_(law)) ▼

The law of evidence, also known as the rules of evidence, encompasses the rules and legal ...

- particularly evidence from the hard sciences – requires particularly rigorous, ... activity by law enforcement, such as a search conducted without a warrant. .... By using this site, you agree to the Terms of Use and Privacy Policy.

## Just Cause Law and Legal Definition | USLegal, Inc.

<https://definitions.uslegal.com/j/just-cause/> ▼

Just cause means a legally sufficient reason. Just cause is sometimes referred to as good cause, lawful cause or sufficient cause. A litigant must often prove to a ...

## Good Cause - Definition, Examples, Cases, Processes

<https://legaldictionary.net/good-cause/> ▼

Good cause is defined in the legal sense as a sufficient reason for a judge to make a ruling. The term "good cause," however, is a broad one, and its definition ...

To "perjure" yourself is to knowingly make false or misleading statements under oath or to sign a legal document you know to be false or misleading. This crime is taken very seriously because the foundation of the legal system depends on trust and credibility. After all, just one sworn statement has the power to tip the scales of justice and dramatically alter someone's life.

## Eminent Domain | Wex Legal Dictionary / Encyclopedia | LII / Legal ...

[https://www.law.cornell.edu/wex/eminent\\_domain](https://www.law.cornell.edu/wex/eminent_domain) ▼

Eminent Domain. The power of the government to take private property and convert it into public use. The Fifth Amendment provides that the government may only exercise this power if they provide just compensation to the property owners.

Hope and Bluefield are cited almost universally by regulated utilities in the United States as a basis for regulators to approve rates that are fair, just and reasonable. Utilities rely upon these decisions to ensure that rates do not become "confiscatory" or constitute an unjust "taking" of those revenues and/or earnings to which the utility shareholders have a legal right.

- From the utility perspective, the concept of fair just and reasonable rates has two central elements: the recovery of costs that are prudently incurred, and the right to earn a reasonable return on investment.
- From the ratepayer perspective, utility rates should be as low as possible, should be understandable, should not change dramatically over time, and should not give any set of customers an unfair advantage over other customers.

## Fraud legal definition of fraud - Legal Dictionary - The Free Dictionary

<https://legal-dictionary.thefreedictionary.com/fraud> ▼

Fraud A false representation of a matter of fact—whether by words or by conduct, by false or misleading allegations, or by concealment of what should have been disclosed—that deceives and is intended to deceive another so that the individual will act upon it to her or his legal injury.

Consumer Fraud • Fraud in the Inducement • Fraud Detection • Constructive fraud

Encl. (4)

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# DEFINITIONS

## allegation - Legal Dictionary | Law.com

[dictionary.law.com/Default.aspx?selected=2387](https://dictionary.law.com/Default.aspx?selected=2387) ▼

allegation. n. a statement of claimed fact contained in a complaint (a written pleading filed to begin a lawsuit), a criminal charge, or an affirmative defense (part of the written answer to a complaint). Until each statement is proved it is only an allegation.

## Mere | Definition of Mere by Merriam-Webster

<https://www.merriam-webster.com/dictionary/mere> ▼

adjective. —used to say that something or someone is small, unimportant, etc. —used to say that something small is important or has a big effect or influence...

## Disagreement | Definition of Disagreement by Merriam-Webster

<https://www.merriam-webster.com/dictionary/disagreement> ▼

Disagreement definition is - the act of disagreeing. How to use disagreement in a sentence. ... noun disagree·ment \, dis-a-'grē-ment \. [Updated on: 14 May ...]

## Public interest | Define Public interest at Dictionary.com

[www.dictionary.com/browse/public-interest](http://www.dictionary.com/browse/public-interest) ▼

Public interest definition, the welfare or well-being of the general public; commonwealth; health programs that directly affect the public interest. See more.

Missing: rescision webster's

## [doc] THE IMPACT OF MISLEADING AND DECEPTIVE CONDUCT

[sydney.edu.au/.../The%20Impact%20of%20Misleading%20and%20Deceptive%20Co...](http://sydney.edu.au/.../The%20Impact%20of%20Misleading%20and%20Deceptive%20Co...) ▼

For rescission to be available at general law, one of the parties to the ... of an interest in land, make a false or misleading representation concerning the nature ... the courts must give effect to the natural and ordinary meaning of the section even if ... In Haydn Pty Limited v Webster [2005] NSWCA (referred to hereunder), the ...

## Cost-effective | Definition of Cost-effective by Merriam-Webster

<https://www.merriam-webster.com/dictionary/cost-effective> ▼

Cost-effective definition is - producing good results without costing a lot of money. How to use cost-effective in a sentence.

## Feasible | Definition of Feasible by Merriam-Webster

<https://www.merriam-webster.com/dictionary/feasible> ▼

Feasible definition is - capable of being done or carried out. How to use feasible in a sentence. feasible and doable.

Missing: effective

## Proof | Definition of Proof by Merriam-Webster

<https://www.merriam-webster.com/dictionary/proof> ▼

Proof definition is - the cogency of evidence that compels acceptance by the mind of ... 1 : the effect of evidence sufficient to persuade a reasonable person that a ...

## Evidence | Definition of Evidence by Merriam-Webster

<https://www.merriam-webster.com/dictionary/evidence> ▼

Evidence definition is - an outward sign : indication. ... evidence that is sufficient to prove a factual matter at issue and justify a favorable judgment on that issue ...

## Arbitrary | Definition of Arbitrary by Merriam-Webster

<https://www.merriam-webster.com/dictionary/arbitrary> ▼

Arbitrary definition is - existing or coming about seemingly at random or by chance or as a capricious ... arbitrarily. play \, ă-'be-'trər-ə-'lē-, 'trē-rə-'\; adverb. — ...

ENC1. (4) P. 3/5

# DEFINITIONS

## What is PRUDENCE? definition of PRUDENCE (Black's Law Dictionary)

<https://thelawdictionary.org/prudence/> ▼

Definition of PRUDENCE: Carefulness, precaution, attentiveness, and good judgment as applied to action or conduct That degree of care required by the ...

## Reasonable / Prudent Man Law and Legal Definition | USLegal, Inc.

<https://definitions.uslegal.com/r/reasonable-prudent-man/> ▼

Reasonable / Prudent Man Law and Legal Definition. Reasonable or Prudent man is a hypothetical person used as a legal standard especially to determine whether someone acted with negligence.... Reasonable man is a term commonly used in tort and criminal law.

## Negligence - Legal Dictionary | Law.com

<https://dictionary.law.com/Default.aspx?selected=1314> ▼

all words any words phrase. negligence, n. failure to exercise the care toward others which a reasonable or prudent person would do in the circumstances, or taking action which such a reasonable person would not.

## Uncontroverted Evidence Law and Legal Definition | USLegal, Inc.

<https://definitions.uslegal.com/u/uncontroverted-evidence/> ▼

Uncontroverted evidence means evidence that indisputable and not open to question, in equity proceedings, where it is clearly shown that a trial court failed to ...

**Shall – Requirement:** Shall is used to indicate a requirement that is contractually binding, meaning it must be implemented, and its implementation verified. Period! Don't think of "shall" as a word, but rather as an icon that SCREAMS: "This is a requirement." If a statement does not contain the word "shall" it is not a requirement.

**Should – Goals, non-mandatory provisions:** Should is used to indicate a goal which must be addressed by the design team but is not formally verified.

## Unjust Enrichment Law and Legal Definition | USLegal, Inc.

<https://definitions.uslegal.com/u/unjust-enrichment/> ▼

Unjust enrichment means when a person unfairly gets a benefit by chance, mistake or another's misfortune for which the one enriched has not paid or worked and morally and ethically should not keep.

➤ A person who has been unjustly enriched at the expense of another must legally return the unfairly kept money or benefits.

## What is UNJUST? definition of UNJUST (Black's Law Dictionary)

<https://thelawdictionary.org/unjust/> ▼

Definition of UNJUST: Contrary to right and justice, or to the enjoyment of his rights by another, or to the standards of conduct furnished by the laws.

## Motions - Legal Dictionary | Law.com

[dictionary.law.com/Default.aspx?selected=1287](https://dictionary.law.com/Default.aspx?selected=1287) ▼

a formal request made to a judge for an order or judgment. ... Most motions require a written petition, a written brief of legal reasons for granting the motion (often called "points and authorities"), written notice to the attorney for the opposing party and a hearing before a judge.

## What is EXCEPTION? definition of EXCEPTION (Black's Law Dictionary)

<https://thelawdictionary.org/exception/> ▼

Definition of EXCEPTION: In practice. A formal objection to the action of the court, during the trial of a cause, in refusing a request or overruling an objection; implying that th.

unreasonable - Legal Definition. adj. Not determined by reason; capricious; arbitrary; irrational. Unsupported by a valid exception to requirements of a warrant; for example, unreasonable search and seizure.

## Error legal definition of error - Legal Dictionary - The Free Dictionary

<https://legal-dictionary.thefreedictionary.com/error> ▼

Error. A mistake in a court proceeding concerning a Matter of Law or fact, which might provide a ground for a review of the judgment rendered in the proceeding. The nature of the error dictates the availability of a legal remedy.

ENC. (4)

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# DEFINITION<sup>s</sup>

Fresh evidence is not new evidence- fresh evidence existed at the time of the initial trial, but for various reasons could not be put before the court. New evidence is that which has become available subsequent to the trial, and is much harder to gain admissibility in evidence that is fresh evidence.

## New Evidence Definition - Duhalme.org

[www.duhalme.org](http://www.duhalme.org) : Legal Dictionary ▼

A term used in the context of appeals to limit the acceptance of evidence not referred to during the hearing or trial of which the appeal is from. Distinguished from fresh evidence.

## Unwarranted dictionary definition | unwarranted defined - Law Dictionary

[law.yourdictionary.com](http://law.yourdictionary.com) : Legal Definitions : unwarranted ▼

unwarranted definition: adjective Having no justification; groundless; unwarranted suspicions of dishonest dealing. See Synonyms at baseless. ...

## Unlawful legal definition of unlawful

<https://legal-dictionary.thefreedictionary.com/unlawful> ▼

Unlawful. Contrary to or unauthorized by law; illegal. When applied to promises, agreements, or contracts, the term denotes that such agreements have no legal effect. The law disapproves of such conduct because it is immoral or contrary to public policy.

## What is SUBSEQUENT? definition of SUBSEQUENT (Black's Law ...

<https://thelawdictionary.org/subsequent/> ▼

Definition of SUBSEQUENT: this is an event that has taken place after another.

ENC. (4)

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Made 5 JUN. 2018, TIME 0/2 1400 hrs.



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6 Jun 2010 / T. 1400 hrs.



ENCL (5) P. 2 of 2