Exhibit DD
Specific Standards for Transmission Lines

Boardman to Hemingway Transmission Line Project

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Preliminary Application for Site Certificate

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ACRONYMS AND ABBREVIATIONS

Note: Not all acronyms and abbreviations listed will appear in this Exhibit.

°C	degrees Celsius
4WD	4-wheel-drive
A	ampere
A/ph	amperes/phase
AC	alternating current
ACDP	Air Contaminant Discharge Permit
ACEC	Area of Critical Environmental Concern
ACSR	aluminum conductor steel reinforced
AIMP	Agricultural Impact Mitigation Plan
AMS	Analysis of the Management Situation
aMW	average megawatt
ANSI	American National Standards Institute
APE	Area of Potential Effect
APLIC	Avian Power Line Interaction Committee
ARPA	Archaeological Resource Protection Act
ASC	Application for Site Certificate
ASP	Archaeological Survey Plan
ASCE	American Society of Civil Engineers
AST	aboveground storage tank
ASTM	American Society of Testing and Materials
ATC	available transmission capacity
ATV	all-terrain vehicle
AUM	animal unit month
B2H	Boardman to Hemingway Transmission Line Project
BCCP	Baker County Comprehensive Plan
BCZSO	Baker County Zoning and Subdivision Ordinance
BLM	Bureau of Land Management
BMP	best management practice
BPA	Bonneville Power Administration
BOR	Bureau of Reclamation
C and D	construction and demolition
CAA	Clean Air Act
CadnaA	Computer-Aided Noise Abatement
café	Corona and Field Effects
CAP	Community Advisory Process
CBM	capacity benefit margin
CFR	Code of Federal Regulations
CH	critical habitat
CIP	critical infrastructure protection
CL	centerline
cm	centimeter
cmil	circular mil
COA	Conservation Opportunity Area
CO_2e	carbon dioxide equivalent

COM Plan	Construction, Operations, and Maintenance Plan
CPCN	Certificate of Public Convenience and Necessity
cps	cycle per second
CRP	Conservation Reserve Program
CRT	cathode-ray tube
CRUP	Cultural Resource Use Permit
CSZ	Cascadia Subduction Zone
CTUIR	Confederated Tribes of the Umatilla Indian Reservation
CWA	*Clean Water Act of 1972*
CWR	Critical Winter Range
dB	decibel
dBA	A-weighted decibel
DC	direct current
DoD	Department of Defense
DOE	U.S. Department of Energy
DOGAMI	Oregon Department of Geology and Mineral Industries
DPS	Distinct Population Segment
DSL	Oregon Department of State Lands
EA	environmental assessment
EDRR	Early Detection and Rapid Response
EIS	Environmental Impact Statement (DEIS for Draft and FEIS for Final)
EFSC or Council	Energy Facility Siting Council
EFU	Exclusive Farm Use
EHS	extra high strength
EMF	electric and magnetic fields
EPA	Environmental Protection Agency
EPC	Engineer, Procure, Construct
EPM	environmental protection measure
EPRI	Electric Power Research Institute
ERO	Electric Reliability Organization
ERU	Exclusive Range Use
ESA	Endangered Species Act
ESCP	Erosion and Sediment Control Plan
ESU	Evolutionarily Significant Unit
EU	European Union
FAA	Federal Aviation Administration
FCC	Federal Communication Commission
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FFT	find, fix, track, and report
FLPMA	Federal Land Policy and Management Act
Forest Plan	Land and Resource Management Plan
FPA	Forest Practices Act
FSA	Farm Services Agency
FWS	U.S. Fish and Wildlife Service
G	gauss

GeoBOB	Geographic Biotic Observation
GF	Grazing Farm Zone
GHG	greenhouse gas
GHz	gigahertz
GIL	gas insulated transmission line
GIS	geographic information system
GPS	Global Positioning System
GRMW	Grande Ronde Model Watershed
GRP	Grassland Reserve Program
HAC	Historic Archaeological Cultural
HCNRA	Hells Canyon National Recreation Area
HPFF	high pressure fluid-filled
HPMP	Historic Properties Management Plan
HUC	Hydrologic Unit Code
Hz	hertz
I-84	Interstate 84
ICC	International Code Council
ICES	International Committee on Electromagnetic Safety
ICNIRP	International Commission on Non-Ionizing Radiation Protection
IDAPA	Idaho Administrative Procedures Act
IDEQ	Idaho Department of Environmental Quality
IDFG	Idaho Department of Fish and Game
IDWR	Idaho Department of Water Resources
ILS	intensive-level survey
IM	Instructional Memorandum
INHP	Idaho Natural Heritage Program
INRMP	Integrated Natural Resources Management Plan
IPC	Idaho Power Company
IPUC	Idaho Public Utilities Commission
IRP	integrated resource plan
IRPAC	IRP Advisory Council
ISDA	Idaho State Department of Agriculture
JPA	Joint Permit Application
KCM	thousand circular mils
kHz	kilohertz
km	kilometer
KOP	Key Observation Point
kV	kilovolt
kV/m	kilovolt per meter
kWh	kilowatt-hour
L_{dn}	day-night sound level
L_{eq}	equivalent sound level
lb	pound
LCDC	Land Conservation and Development Commission
LDMA	Lost Dutchman's Mining Association
LiDAR	light detection and ranging
LIT	Local Implementation Team

LMP	land management plan
LOLE	Loss of Load Expectation
LRMP	land and resource management plan
LUBA	Land Use Board of Appeals
LWD	large woody debris
m	meter
mA	milliampere
MA	Management Area
MAIFI	Momentary Average Interruption Frequency Index
MCC	Malheur County Code
MCCP	Morrow County Comprehensive Plan
MCE	Maximum Credible Earthquake
MCZO	Morrow County Zoning Ordinance
mG	milligauss
MHz	megahertz
mm	millimeter
MMI	Modified Mercalli Intensity
MP	milepost
MPE	maximum probable earthquake
MRI	magnetic resonance imaging
MVAR	megavolt ampere reactive
Mw	mean magnitude
MW	megawatt
µV/m	microvolt per meter
N_2O	nitrous oxide
NAIP	National Agriculture Imagery Program
NED	National Elevation Dataset
NEMS	National Energy Modeling System
NEPA	*National Environmental Policy Act of 1969*
NERC	North American Electric Reliability Corporation
NESC	National Electrical Safety Code
NF	National Forest
NFPA	National Fire Protection Association
NFS	National Forest System
NGDC	National Geophysical Data Center
NHD	National Hydrography Dataset
NHOTIC	National Historic Oregon Trail Interpretive Center
NHT	National Historic Trail
NIEHS	National Institute of Environmental Health Sciences
NIST	National Institute of Standards and Technology
NOAA	National Oceanic and Atmospheric Administration
NOAA Fisheries	National Oceanic and Atmospheric Administration Fisheries Division
NOI	Notice of Intent to File an Application for Site Certificate
NOV	Notice of Violation
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service

NRHP	National Register of Historic Places
NSR	noise sensitive receptor
NTTG	Northern Tier Transmission Group
NWGAP	Northwest Regional Gap Analysis Landcover Data
NWI	National Wetlands Inventory
NWPP	Northwest Power Pool
NWR	National Wildlife Refuge
NWSRS	National Wild and Scenic Rivers System
NWSTF	Naval Weapons Systems Training Facility
O_3	ozone
O&M	operation and maintenance
OAIN	Oregon Agricultural Information Network
OAR	Oregon Administrative Rules
OATT	Open Access Transmission Tariff
ODA	Oregon Department of Agriculture
ODEQ	Oregon Department of Environmental Quality
ODF	Oregon Department of Forestry
ODFW	Oregon Department of Fish and Wildlife
ODOE	Oregon Department of Energy
ODOT	Oregon Department of Transportation
OHGW	overhead ground wire
OHV	off-highway vehicle
OPGW	optical ground wire
OPRD	Oregon Parks and Recreation Department
OPS	U.S. Department of Transportation, Office of Pipeline Safety
OPUC	Public Utility Commission of Oregon
OR	Oregon (State) Highway
ORBIC	Oregon Biodiversity Information Center
ORS	Oregon Revised Statutes
ORWAP	Oregon Rapid Wetland Assessment Protocol
OS	Open Space
OSDAM	Oregon Streamflow Duration Assessment Methodology
OSHA	Occupational Safety and Health Administration
OSSC	Oregon Structural Specialty Code
OSWB	Oregon State Weed Board
OWC	Oregon Wetland Cover
P	Preservation
PA	Programmatic Agreement
pASC	Preliminary Application for Site Certificate
PAT	Project Advisory Team
PCE	Primary Constituent Element
PEM	palustrine emergent
PFO	palustrine forested
PGA	peak ground acceleration
PGE	Portland General Electric
PGH	Preliminary General Habitats
Pike	Pike Energy Solutions

PNSN	Pacific Northwest Seismic Network
POD	Plan of Development
POMU	Permit to Operate, Maintain and Use a State Highway Approach
PPH	Preliminary Priority Habitats
Project	Boardman to Hemingway Transmission Line Project
PSD	Prevention of Significant Deterioration
PSS	palustrine scrub-shrub
R	Retention
R-F	removal-fill
RCM	Reliability Centered Maintenance
RCRA	Resource Conservation and Recovery Act
ReGAP	Regional Gap Analysis Project
RFP	request for proposal
RLS	reconnaissance-level survey
RMP	resource management plan
ROD	Record of Decision
ROE	right of entry
RNA	research natural area
ROW	right-of-way
SAIDI	System Average Interruption Duration Index
SAIFI	System Average Interruption Frequency Index
SC	Sensitive Critical
SEORMP	Southeastern Oregon Resource Management Plan
SF6	sulfur hexafluoride
Shaw	Shaw Environmental and Infrastructure, Inc.
SHPO	State Historic Preservation Office
SLIDO	Statewide Landslide Inventory Database for Oregon
SMS	Scenery Management System
SMU	Species Management Unit
SPCC	Spill Prevention, Containment, and Countermeasures
SRMA	Special Recreation Management Area
SRSAM	Salmon Resources and Sensitive Area Mapping
SSURGO	Soil Survey Geographic Database
STATSGO	State Soil Geographic Database
SUP	special-use permit
SV	Sensitive Vulnerable
SWPPP	Stormwater Pollution Prevention Plan
T/A/Y	tons/acre/year
TDG	Total Dissolved Gas
TES	threatened, endangered, and sensitive (species)
TG	Timber Grazing
TMIP	Transmission Maintenance and Inspection Plan
TNC	The Nature Conservancy
tpy	tons per year
TSD	treatment, storage, and disposal
TV	television
TVES	Terrestrial Visual Encounter Surveys

TVMP	Transmission Vegetation Management Program
UBAR	Umatilla Basin Aquifer Restoration
UBWC	Umatilla Basin Water Commission
UCDC	Umatilla County Development Code
UCZPSO	Union County Zoning, Partition and Subdivision Ordinance
UDP	Unanticipated Discovery Plan
U.S.	United States
USACE	U.S. Army Corps of Engineers
U.S.C.	United States Code
USDA	U.S. Department of Agriculture
USFS	U.S. Department of Agriculture, Forest Service
USGS	U.S. Geological Survey
UWIN	Utah Wildlife in Need
V/C	volume to capacity
V	volt
VAHP	Visual Assessment of Historic Properties
VMS	Visual Management System
VQO	Visual Quality Objective
VRM	Visual Resource Management
WAGS	Washington ground squirrel
WCU	Wilderness Characteristic Unit
WECC	Western Electricity Coordinating Council
WHO	World Health Organization
WMA	Wildlife Management Area
WOS	waters of the state
WOUS	waters of the United States
WPCF	Water Pollution Control Facility
WR	winter range
WRCC	Western Regional Climate Center
WRD	(Oregon) Water Resources Division
WRP	Wetland Reserve Program
WWE	West-wide Energy
XLPE	cross-linked polyethylene

Exhibit DD
Specific Standards for Transmission Lines

1.0 INTRODUCTION

Exhibit DD demonstrates that the Boardman to Hemingway Transmission Line Project (Project) complies with the specific siting standard for transmission lines with regard to electric fields that will be generated by the Project, in accordance with Oregon Administrative Rule (OAR) 345-024-0090, as specified pursuant to OAR 345-021-0010(1)(dd), paragraph (C).

Specifically, the transmission line standards require the Energy Facility Siting Council (EFSC or Council) to find that the transmission line will have alternating current (AC) electric fields of 9 kilovolts (kV) or less per meter (m) above the ground and induced currents will be as low as reasonably achievable. Exhibit AA presents information and analysis regarding the effects of electric and magnetic fields that may be generated by the Project, and the analysis provided in this Exhibit relies on analysis developed in Exhibit AA.

2.0 APPLICABLE RULES AND STATUTES

OAR 345-021-0010(1)(dd) describes the required content for Exhibit DD, as follows:

> *Information about the facility providing evidence to support findings by the Council as required by the following rules*
>
> *C. For any transmission line under Council jurisdiction, OAR 345-024-0090.*

Under OAR 345-024-0090, the Council must find that Idaho Power Company (IPC):

1. *Can design, construct, and operate the proposed transmission line so that alternating current electric fields do not exceed 9 kV per meter at one meter above the ground surface in areas accessible to the public; and*
2. *Can design, construct, and operate the proposed transmission line so that induced currents resulting from the transmission line and related or supporting facilities will be as low as reasonably achievable.*

Additionally, Section VIII of the Project Order requires that public concerns be addressed. No concerns specific to Exhibit DD were raised. However, public concerns about electrical effects with regard to induced currents are addressed below in Section 3.4. Exhibit AA, Section 3.3.3 addresses other public concerns including human health and safety electric fields, magnetic fields, audible noise, radio noise, stray voltage and equipment interference.

3.0 ANALYSIS

3.1 Analysis Area

The Project Order, Section VII does not identify an analysis area for determining specific siting standards for transmission lines. However, for the purposes of analyzing compliance with the standard that AC electric fields do not exceed 9 kV per meter at one meter above the ground

surface in areas accessible to the public, the right-of-way (ROW) was considered the analysis area. The Project includes the following related and supporting facilities in Oregon:

- Proposed Corridor: 277.2 miles of 500-kilovolt (kV) transmission line corridor, 5.0 miles of double circuit 138/69-kV transmission line corridor, and 0.3 mile of 138-kV transmission line corridor.
- Alternate Corridor Segments: Seven alternate corridor segments consisting of approximately 134.1 miles that could replace certain segments of the Proposed Corridor. IPC has proposed these alternate corridor segments in order to allow flexibility for IPC and EFSC, as well as federal agencies, to reconcile competing resource constraints in several key locations.
- One proposed substation expansion of 3 acres; two alternate substation sites (one 3-acre substation expansion and one new 20-acre substation). IPC ultimately needs to construct and operate only one substation expansion or substation in the Boardman area.
- Eight communication station sites of less than one acre each in size; four alternate communication station sites along alternate corridor segments.
- Temporary and permanent access roads.
- Temporary multi-use areas, pulling and tensioning sites, and fly yards.

The features of the Project are fully described in Exhibit B and the Site Boundary for each Project feature is described in Exhibit C, Table C-21. The location of the Project (Site Boundary) is outlined in Exhibit C.

3.2 Methods

The methods IPC used to model expected electric fields and induced current for the Project are the same as described in Exhibit AA, Section 3.2 and are not repeated here.

3.3 Information Required by OAR 345-024-0090

3.3.1 9 kV Per Meter AC Electric Field

OAR 345-24-0090 Siting Standards for Transmission Lines

(1) Can design, construct and operate the proposed transmission line so that alternating current electric fields do not exceed 9 kV per meter at one meter above the ground surface in areas accessible to the public.

The electric fields at the edges of the ROW and the highest electric field found within the ROW for each portion of the transmission line are shown in Figures AA-1, AA-3, AA-5, AA-7, and AA-9 of Exhibit AA. The assumptions that were used result in the highest potential electric fields and were used to evaluate if the lines meet the operation requirement of 9 kV/m or below. Table DD-1 summarizes the major axis electric fields at their peak. Based on the predicted results, there are no conditions which would exceed 9 kV/m at one meter above the ground surface in areas accessible to the public. Therefore, no additional measures to reduce electric field levels are proposed by IPC.

Table DD-1. Electric Fields for Proposed and Alternate Corridor Segments

Region	Structure Type	Miles	ROW Width (feet)	South/West ROW Edge (kV/m)	Maximum within ROW (kV/m)	North/East ROW Edge (kV/m)
Proposed Corridor/Proposed Transmission Structures						
Morrow County	500-kV lattice	40.6	250	0.6	8.3	0.6
Umatilla County	500-kV lattice	49.5	250	0.6	8.3	0.6
Union County	500-kV lattice	39.8	250	0.6	8.3	0.6
Baker County	500-kV lattice	69.2	250	0.6	8.3	0.6
	138/69-kV tubular steel monopole rebuild with distribution underbuild [1]	5.3	100	0.07	0.5	0.05
Malheur County	500-kV lattice	72.0	250	0.6	8.3	0.6
Alternate Corridor Segments						
Horn Butte	500-kV Single Circuit Lattice Structure	21.3	250	0.6	8.3	0.6
Longhorn	500-kV Single Circuit Lattice Structure	10.2	250	0.6	8.3	0.6
Glass Hill	500-kV Single Circuit Lattice Structure	7.5	250	0.6	8.3	0.6
Flagstaff	500-kV Single Circuit Lattice Structure	14.1	250	0.6	8.3	0.6
	230-kV Steel H-frame relocation	0.9	125	0.9	3.2	0.9
Willow Creek	500-kV Single Circuit Lattice Structure	24.6	250	0.6	8.3	0.6
Malheur S	500-kV Single Circuit Lattice Structure	33.6	250	0.6	8.3	0.6
Double Mountain	500-kV Single Circuit Lattice Structure	33.3	250	0.6	8.3	0.6
Alternative Transmission Structures						
NA	500-kV tubular Steel H-frame	NA	250	1.2	8.9	1.2
NA	500-kV tubular steel monopole Structure	NA	250	0.8	8.1	0.7

Major Single Axis Electric Field at standard height of 1 meter.
Ground Clearance:
37 feet for 500 kV lines with lattice tower structures, tubular H-frame structures, and monopole structures
37 feet for 500 kV lines with tubular H-frame structures
28 feet for 230-kV lines with steel H-frame structures
34 feet for 138/69 kV lines with single tubular pole structures.
Without underbuilt distribution line. Underbuilt distribution line will result in similar or lower electric field values.
kV/m = kilovolt per meter; ROW = right-of-way
[1] Field levels are reported without the underbuilt distribution line included. The inclusion of an underbuilt distribution line on the 138/69-kV line will reduce the reported electric field levels due to the transmission lines or, as a worst-case, have only a negligible reduction on the reported field levels.

3.3.2 Induced Currents

OAR 345-24-0090 Siting Standards for Transmission Lines

(2) Can design, construct and operate the proposed transmission line so that induced currents resulting from the transmission line and related or supporting facilities will be as low as reasonably achievable.

The electric fields associated with a transmission line can induce small electric currents in metallic objects adjacent to or under transmission lines. Metallic roofs, vehicles, equipment, and fences are examples of objects that can develop a small electric charge when in proximity to high-voltage transmission lines associated with the structures types identified in Table DD-1. The amount of induced charge depends on the characteristics and size of the object, its grounding, and the electric-field strength. An electric current can flow when an object has an induced charge and a path to ground. The amount of current flow is determined by the impedance of the object to the ground and the voltage induced between the object and ground. The amount of induced current that can flow is important for evaluating the potential for nuisance shocks to people and the possibility of other effects such as fuel ignition.

The threshold of perception is approximately 1 milliampere (mA) for humans (Dalziel and Mansfield 1950). If the current increases sufficiently beyond a person's perception threshold, it can become bothersome and possibly startling. Larger currents can cause the muscles of the arm and hand to involuntarily contract so a person cannot let go of an object. The value at which 99.5 percent of men, women, and children can still let go of an object is approximately 9, 6, and 5 mA, respectively. Transmission lines are designed such that the maximum amount of current induced on the largest metallic object normally expected under the line will be less than 5 mA.

When establishing contact with a vehicle or metallic object under a transmission line, a small arc may occur. This is often called a nuisance shock. Nuisance shocks and induced currents can be reduced or eliminated by proper grounding of the object, shielding it from the electric field, or positioning it farther from the transmission line.

The magnitude of induced currents and potentials on objects or equipment under the proposed lines will depend on the magnitude of the electric field, the size and shape of the object, and the object's connection (resistance) to ground. Grounding the object will reduce the induced potential to essentially zero and eliminate the object as a source of shocks or currents.

Fences or metal objects within the ROW should be grounded. Grounding will eliminate induced currents or potentials on these objects as a concern. Unlike fences or buildings, mobile equipment, such as vehicles and agricultural machinery, cannot be permanently grounded. The National Electrical Safety Code (NESC) requires that for high-voltage power lines, such as the 69-kV, 138-kV, and 500-kV lines proposed for the Project, sufficient conductor clearance to the ground be maintained to limit the short-circuit current induced in the largest anticipated vehicle under the line to 5 milliamperes (mA) or less (NESC 1997). If necessary, this can be accomplished at locations where large vehicles are anticipated by increasing the line height, shielding the electric field, or by limiting access. IPC follows the NESC requirements. Exhibit B, Section 3.2.2 provides specific examples of criteria for determining line height.

The relation between short-circuit current and electric field for several vehicles and agricultural related pieces of equipment has been measured and is listed in Table DD-2 (EPRI 1982).

Table DD-2. Induced Current Factors

Object	I_{sc}/E (mA/kV)
Car—L 4.6 m x W 1.78 m x 1.37 m	0.088
Pickup Truck—L 5.2 m x W 2.0 m x H 1.7m	0.11
Tractor-Semitrailer (40-foot trailer)—L 15.75 m x W 2.4 m x H 3.7 m	0.64
Farm Tractor pulling Crop Wagon—Total Length 9.55 m Tractor—L 3.7 m x W 1.95 m x H 1.5 m Crop Wagon—L 5.65 m x W 2.11 m x H 2.5 m	0.30

I_{sc} = short-circuit current
E = AC electric field

Multiplying the factors listed in Table DD-2 by the electric field yields the short-circuit current expected under conditions expected to produce the greatest magnitude short-circuit currents. The highest electric field calculated within the ROW for the proposed lines in Oregon was below 9 kV/m (8.3 kV/m for lattice tower, 8.9 kV/m for H-frame). The vehicles and equipment listed in Table DD-2 will have short-circuit currents less than the 5-mA current required by the NESC except for the tractor-semitrailer, for which the induced current would be 5.7 mA if the entire length of the tractor-semitrailer were in a 8.9 kV/m electric field (e.g., parallel to the line). Tractor-semitrailers generally will not be anticipated under the line except at line road crossings. At locations where large vehicles are anticipated, the line height will be increased if necessary (or the line design altered) so that the line complies with the NESC 5-mA safety requirement.

IPC has used reasonable line designs such that the electric fields and thus induced currents and potentials from the proposed 69-kV, 138-kV, 230-kV, and 500-kV lines for the Project are comparable to those for other 69-kV, 138-kV, 230-kV, and 500-kV lines in operation and comply with the Oregon 9 kV/m siting standard for transmission lines. In addition to line design, induced currents and potentials will be reduced or eliminated by IPC by following proper grounding practices and adherence to the NESC. IPC's use of line designs and proper grounding practices will keep anticipated induced currents and potentials to a safe and reasonable level.

3.4 Public Concerns

Public comments received are associated with the AC electric field concerning the voltage on the conductors of transmission lines. Issues that may arise with the electric field are induced currents and voltages on large conductive objects, such as large vehicles, under or near the lines. These voltages and currents may produce nuisance shocks or lead to fuel ignition in certain conditions. This and other aspects of the electrical environment that are health and safety concerns to the public are addressed in Exhibit AA, Section 3.3.3.

ODOE asked if IPC has any existing landowner notification or education program regarding stray voltage. IPC does have landowner programs concerning stray voltage, but stray voltageis not an issue for this Project. This is because this Project will construct a 3-phase balanced high voltage transmission lines which because of its configuration the issue of stray voltage is eliminated. Stray voltage is only an issue that occurs with lower voltage distribution systems, that have unequally loaded phases and that have an improperly grounded neutral wire. Stray voltage can also be an issue that occurs with the customer's electrical system beyond the local utility company's meter. Though stray voltage is an unrelated issue to this project, more information on this topic is available at:

- http://www.idahopower.com/AboutUs/Safety/default.cfm
- http://www.idahopower.com/pdfs/Safety/StrayVoltageBooklet.pdf

- www.idahopower.com/pdfs/Safety/Stray_Voltage_Brochure.pdf
- http://www.idahopower.com/pdfs/AboutUs/PlanningForFuture/ProjectNews/AgriOps.pdf

ODOE also asked if IPC has any existing landowner education or notification program regarding objects and structures of a permanent nature, and risks that moveable objects such as vehicles or irrigation equipment could become charged and present a risk to the public.

IPC's education process begins with the ROW acquisition process. As easements are acquired each landowner is provided with an information packet containing several IPC pamphlets regarding hazards around transmission lines and power quality issues that might be experienced. IPC also maintains a Power Quality Group that is available free of charge to assist the public with any issues associated with electric fields, magnetic fields, audible noise, radio noise, stray voltage, and equipment interference.

When a complaint or concern is received, it is routed from IPC's call center to the appropriate staff within the Power Quality Group. Power Quality Group staff follows up with a phone call to the individual for more information. This is typically followed by a site visit by an IPC power quality engineer who then meets with the customer, inspects the facility, and takes field measurements as needed. An assessment is then completed as to what can be done to alleviate the issue and recommendations are identified for action. More information is available on these topics at:

- http://www.idahopower.com/pdfs/Safety/safetyBrochure.pdf
- http://www.idahopower.com/pdfs/Safety/EMFbrochure.pdf

4.0 CONCLUSION

In Exhibit DD, IPC has presented information based on research and standard transmission design parameters for the Project to characterize AC electrical fields along the Project. Exhibit DD provides the information and analysis that, together with the data provided in Exhibit AA, demonstrate that the Project is consistent with the public health and safety and complies with the specific approval standard for transmission lines. Specifically, Exhibit DD provides substantial evidence upon which the Council can conclude that (1) IPC can design, construct, and operate the proposed transmission line so that alternating current electric fields do not exceed 9 kV per meter at one meter above the ground surface in areas accessible to the public; and (2) IPC can design, construct, and operate the proposed transmission line so that induced currents resulting from the transmission line and related or supporting facilities will be as low as reasonably achievable, consistent with OAR 345-024-0090.

5.0 SUBMITTAL AND APPROVAL COMPLIANCE MATRICES

Tables DD-3 and DD-4 provide cross references between the Exhibit submittal requirements of OAR 345-021-0010 and the Council's Approval standards of OAR 345-022-0000 and where discussion can be found in this Exhibit.

Table DD-3. Submittal Requirements Matrix

Requirement	Location
OAR 345-021-0010(1)(dd)	
(dd) **Exhibit DD.** If the proposed facility is a facility for which the Council has adopted specific standards, information about the facility providing evidence to support findings by the Council as required by the following rules:	
* * * C. For any transmission line under Council jurisdiction, OAR 345-024-0090.	Section 3.0

Table DD-4. Approval Standard

Requirement	Location
OAR 345-024-0090 Siting Standards for Transmission Lines	
To issue a site certificate for a facility that includes any transmission line under Council jurisdiction, the Council must find that the applicant:	
(1) Can design, construct and operate the proposed transmission line so that alternating current electric fields do not exceed 9 kV per meter at one meter above the ground surface in areas accessible to the public;	Section 3.3.1
(2) Can design, construct and operate the proposed transmission line so that induced currents resulting from the transmission line and related or supporting facilities will be as low as reasonably achievable.	Section 3.3.2

6.0 RESPONSE TO COMMENTS FROM THE PUBLIC AND REVIEWING AGENCIES

Table DD-5 provides cross references between comments cited in the Project Order from reviewing agencies and the public and where discussion can be found in the Exhibit.

Table DD-5. Public and Reviewing Agency Comments

Requirement	Location
Project Order Section VIII(a) Comments Specific to Siting Standards for Transmission Lines (OAR 345-024-0090)	
Project Order Section VIII(a) Public Comments	
Numerous commenters expressed concern about potential human health impacts of a high voltage transmission line from electromagnetic fields, corona effects, and induced currents. Exhibit AA of the ASC must include evidence that the proposed facility can meet the Council standards specific to transmission lines, and include mitigation measures proposed by the applicant to reduce or eliminate threats to human health and safety during construction and operation of the transmission line.	Section 3.4 Also see Exhibit AA
Many commenters expressed concern about the possibility that the transmission line will interfere with the normal operations of radios, telephones, and other electronic devices in the vicinity of the line. Exhibit AA should include discussion and mitigation measures to reduce or eliminate interference with electronic devices. This is especially important in farm use zones, where farmers often use a variety of electronic locating devices on mechanical equipment during planting and harvesting and other farming activities.	Section 3.4 Also see Exhibit AA

7.0 REFERENCES

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