Department of Energy

Bonneville Power Administration
P.O. Box 3621
Portland, Oregon 97208-3621

FREEDOM OF INFORMATION ACT PROGRAM

June 17, 2019

In reply refer to: FOIA #BPA-2019-00996-F

Michael Ravnitsky
(b) (6)
[redacted]

Dear Mr. Ravnitsky,

Thank you for your interest in the Bonneville Power Administration (BPA). Your request for records made under the Freedom of Information Act, 5 U.S.C. § 552, (FOIA) was received on June 7, 2019, and has been assigned Department of Energy (DOE) control number BPA-2019-00996-F. Please use that number in any correspondence with the agency regarding your request.

Request
"A copy of the listing of Technology Innovation Project numbers and titles (all years available). These are sometimes referred to as TIP report numbers."

Acknowledgement
BPA has reviewed your request and has determined that it fulfills all of the criteria of a proper request under the FOIA and DOE FOIA regulations at Title 10, Code of Federal Regulations, Part 1004.

Response
BPA's Technology Innovation Office provided the accompanying list of Technology Innovation Project (TIP) numbers, dated from the start of the program in 2005 to the present. Please note, there are gaps in the TIP numbering. Early in the program, all proposals were assigned numbers and for those proposals not selected, the corresponding TIP number was not reused. For example, TIP numbers 3 and 4 are absent from the list because, although proposals were submitted, the projects were not selected for funding. BPA is herein releasing 9 pages of responsive information, with no redactions applied.

More information about BPA's Technology Innovation Office partnerships with utilities, universities, nonprofits, and research organizations is publicly available at the following internet link: https://www.bpa.gov/Doing%20Business/TechnologyInnovation/Pages/default.aspx

Fees
There are no fees associated with the agency's response to your request.

Certification
Pursuant to 10 C.F.R. § 1004.7(b)(2), I am the individual responsible for the information and records release described above. Your FOIA request BPA-2019-00996-F is now closed with all available agency records and information provided.

Appeal
The adequacy of the search may be appealed within 90 calendar days from your receipt of this letter pursuant to 10 C.F.R. § 1004.8. Appeals should be addressed to:

Director, Office of Hearings and Appeals
HG-1, L'Enfant Plaza
U.S. Department of Energy
1000 Independence Avenue, S.W.
Washington, D.C. 20585-1615

The written appeal, including the envelope, must clearly indicate that a FOIA appeal is being made. You may also submit your appeal by e-mail to OHA.filings@hq.doe.gov, including the phrase "Freedom of Information Appeal" in the subject line. (The Office of Hearings and Appeals prefers to receive appeals by email.) The appeal must contain all the elements required by 10 C.F.R. § 1004.8, including a copy of the determination letter. Thereafter, judicial review will be available to you in the Federal District Court either (1) in the district where you reside, (2) where you have your principal place of business, (3) where DOE's records are situated, or (4) in the District of Columbia.

You may contact BPA's FOIA Public Liaison, Jason Taylor, at 503.230.3537, jetaylor@bpa.gov, or the address on this letter header for any further assistance and to discuss any aspect of your request. Additionally, you may contact the Office of Government Information Services (OGIS) at the National Archives and Records Administration to inquire about the FOIA mediation services they offer. The contact information for OGIS is as follows:

Office of Government Information Services
National Archives and Records Administration
8601 Adelphi Road-OGIS
College Park, Maryland 20740-6001
E-mail: ogis@nara.gov
Phone: 202-741-5770
Toll-free: 1-877-684-6448
Fax: 202-741-5769

Thank you again for your interest in the Bonneville Power Administration.

Sincerely,

Candice D. Palen
Freedom of Information/Privacy Act Officer

Responsive agency records accompany this communication.

TIP	TITLE
1	Advanced Surge Suppression Resistor Development
2	Automated Diagnostic for Packaged HVAC
5	CEATI -- Life Cycle Management of Substation Equipment
6	CEATI Working Group: Overhead Line Design, Wind and Ice Mitigation Interest Group
10	CEATI Working Group: Transmission Line Asset Management Interest Group
11	CIGRE Transmission Tower Working Group
12	CIGRE B2.12/26, Electrical Aspects of Conductors Working Group
13	Climate Change Streamflows for the Columbia Basin
15	Design and Build Process for Seismically Isolating Substation Equipment Using Friction-Type Energy Dissipation Devices
19	EPRI Program 170 -- Dynamic Energy Management
20	EPRI TC Project -- Electrical Condition Assessment of Polymer Insulators
21	EPRI Membership -- Program 38: Increased Utilization of Transmission Corridors
22	EPRI TC Project -- Development of Inspection Tool to Identify NCIs at High Risk of Mechanical Failure during In-Service Conditions
23	EPRI Membership -- Program 35: Overhead Transmission
24	EPRI TC Project -- Seismic Studies
25	EPRI Membership -- Program 37: Substations
27	STATCOM Development of a Scalable Energy Storage System
28	EPRI TC Project -- Evaluation of Aged Insulators (porcelain, glass or NCI) on the BPA System or being considered for purchase
31	EPRI TC Project -- Hotstick Leakage Monitor -Prototype Development
32	Human Factors in Dispatcher Training and Operations
34	Improved Wind Farm Modeling in Tx System Studies
35	Interactability Demonstration Project
36	Line Tension Monitors Internal Data Reduction and Review (Continuation)
37	Load Modeling in Power System Studies
38	Low Temperature Heat Pump
41	Mini-Split Heat Pump Demonstration and Monitoring
42	National Seismic Research Center Collaborative
43	Power Tech Labs: Assessment of variable characteristics of the PNW region's wave and tidal current power resources
44	EPRI TC Project -- Non-Ceramic Insulator Electrical Assessment Tool for Energized Work
45	Operational Multi-Gigabit Ethernet Transport (OMET)
46	Operations Real-time Study Improvement
47	Operations Study Process Improvement: Next Hour
50	Power System Controls - Inter-area Oscillation Damping

51	Power System Controls - Response-Based Voltage Stability Controls
52	Generator Performance Measures and Model Validation
53	Power Systems Engineering Research Center continuing membership
54	Real-Time Oscillation Monitoring Expert
57	Extreme Event Risk and Vulnerability Assessment (SERA)
59	Short Term Wind Forecast
62	R&D state estimator to real time transient stability phase 1
70	PNNL - Wind Regulation & Load Following Study
74	PNNL: Wide Area Energy Storage & Management
79	EPRI: Development and Demonstration of Advanced Lighting Technologies for Energy Efficiency and Demand Response Applications
89	Pacific Int'l Eng: Integrated Decision Support System for Location, Assessment, and Optimization of In-Stream Tidal Energy Developments
88	Development of a Monitoring and Communications System For Distributed Energy Resources
90	PNNL: Grid-Responsive Demand-Side Control using Grid Friendly™ Appliance Technologies
93	Normal and Emergency Operation Visualization
94	Renewables Integration Model (RIM) Validation and Calibration
95	PNNL: Wide Area Power System Security Region
97	Snohomish PUD: Tidal In-Stream Energy Conversion (TISEC) Project in Puget Sound, WA - Phase IIA
106	Forecasting for Wind Energy Grid Integration
108	Improving Wind Power Forecasting for the PNW
114	Wind Integration Research, Demonstration and Exploration
117	Development of High-Efficiency Low-Lift Vapor Compression System
119	Low Probability Tail Event Analysis and Mitigation in BPA Control Area
123	Self-Correcting Building HVAC Controls Technology Development
124	Real-Time Dynamic Stability Analysis Modeling in PowerWorld Simulator
129	Real-Time Oscillation Monitoring Expert for the BPA System
132	Dynamic Thermal Line Rating
136	Combine EPRI TC Non-Ceramic Insulator Projects:
139	Sub-grade Corrosion Mgt of Transmission Line Structures (EPRI TC# 14208, PID# 68814)
140	EE Emerging Technology Assessment and Demonstration Project
141	Compression Fitting Shunt Research
145	Grid Segmentation
148	Systems Operations R&D Deployment

151	Investigate the Feasibility of Mitigating Dreissenid Mussel Fouling in Raw Water Systems
152	Prioritizing Zebra and Quagga Mussel Monitoring in Columbia River Basin
153	Survival and Growth Rate of Dreissenid Mussels in Columbia Basin
156	Seismic Projects
159	Powerflow Control Applications in BPA Grid
160	Wind Farm Voltage Control - Contracts in Prj 51
163	BPA Collaboration with Calif ISO RFP on Wind Generation Forecasting Service
164	Wind Energy "Rapid Ramp" Event Tracking System
169	Aging Assessment Tools to Evaluate BPA Transmission Line Grounding
171	Electricity Industry Center Membership
172	CIGRE Corporate Membership, Terry Oliver
173	CIGRE Individual membership for Larry Bekkedahl
174	CEATI: Power System Planning & Operations Working Group
175	Electric Energy Industrial Consortium
176	CEATI: Grounding and Lightning Task Force
182	Field Evaluation of High Performance (U≤0.22) Windows in Manufactured Housing
192	Simultaneous Distribution of AC and DC Power in Buildings
204	Model Validation
216	Lab & Field Testing, and Modeling of Advanced Variable Refrigerant Flow (VRF) Systems
220	Smart End-Use Energy Storage and Integration of Renewable Energy
232	An Investigation of the Interaction Between Calcim and Temperature as Liminting Factors for Quagga ussel Growth in the Columbia, Snake, and Willamette Rivers.
233	Field Evaluation of the Service Life of Foul-Release Coatings in Columbia River
237	Bidirectional Multipath Dynamic Transfer Analysis
238	EPRI special Project: Coordinated Early Deployment
239	Power Transformer Winding Resistance Demagnetizer
240	Short-Term FCRPS Modeling Development
241	Evaluation of Power Flow Controls, Demand Response and Energy Storage
242	Impact of Power Electronic Loads on the Grid Stability
243	Resilience Assessment of Bulk Power Systems
244	Advanced Life Extending Control of Multiple Energy Storage
245	Control of Power Flow Control Devices for Optimal Use Tx Capacity
246	BattleGuard
247	Image Processing Occupancy Sensor
248	Residential Predictive Occupancy Zoned HVAC Demonstration MountainLogic
249	System for Imp Monitoring and Assess of Power System Operations & Equip

250 Control Room and Advanced PMU Visualizations using PowerWorld
251 PowerWorld State Estimator
252 Integrated Daylighting and Energy Analysis Toolkit
253 Compressed Air and Thermal Energy Storage Columbia River Basalt
254 Multi-Unit Optimization of a Hydropower Powerhouse
255 EPRI PS193: Cyber Security
256 EPRI EPRI 40.019: Strategic and Flexible Transmission Planning, PID# 070598
257 Energy and Cost Optimized Technology Options to Meet Energy Needs of Northwest Food Processors
258 Development of a state-of-the-art computational framework and platform for the optimal control of multi-reservoir systems under uncertainty
259 Short-Term Hydropower Production and Marketing Optimization (HyProM)
260 A Modular and Dispatchable Battery Storage System
261 Determining and Improving the Energy Intensity of Microwave Sterilization & Pasteurization Technologies
262 Demonstration of 2nd Generation Prototype Ducted GE "Brillion" Hybrid Water Heater in the PNNL Lab Homes
263 EPRI Development of Next-Generation Heat Pump Water Heater Technology
264 Modeling Geomagnetically Induced Current for Evaluation and Mitigation
265 Computationally Efficient, Flexible, Short-Term Hydropwer Optimization and Uncertainty Analysis (SHOA) for the BPA System
266 EWEB / Metropolitan Wastewater Management Commission (MWMC)
267 Heat Pump Water Heater Demand Response Application
268 Verification and Validation of Transient Stability Models and Results
269 Voltage Management: VIP Approach
270 Demand Response Demonstration Market
271 A Revolutionary Cold-Climate Heat Pump Water Heater
272 EPRI Program 170: End-Use Energy Efficiency and Demand Response
274 Development and Demonstration of Applications for BPA and FCRPS Compliance with Modeling Standards and Performance Monitoring
275 New remedial action scheme (RAS) research work to avoid cascading caused by intermittent output of renewable energy resources
276 Enhanced monitoring and investigation of the spread and potential impact of aquatic invasive mussels in the Columbia River Basin, with special reference to mitigation and placement of boat cleaning stations
277 Data Centers as Demand Response Resources
278 Transformer Bushing Performance

279 Implementation of a Full-Topology, Robust, and Generalized State Estimator
281 Impacts Due to Dynamic Transfers
282 Transmission Power Flow Controls for Bulk Grid Optimization
283 Impact of Power Electronic Loads on the Grid Stability (This project is coordinated with the larger nation-wide DOE CERTS project at Lawrence Berkeley National Laboratory (LBNL).)
284 EPRI Flexible Operation of Hydropower Assets
285 Energy Storage Multifaceted Tool for Demand Management
286 Energy Storage as a Demand Response Asset at Industrial Facilities and at Critical Points on the Transmission Network to Increase and Decrease Load on Demand
287 Reducing Technology Evaluation Costs Through a Technology Portal
288 Disruptive Methodology for Robust Semi-Virtual Pilot Projects
289 Wide Area Damping Control Proof-of-Concept Demonstration
290 Modeling High Impact Low Frequency Geomagnetic Disturbances Using Magnetic Field Data From Solar-Orbiting Spacecraft
291 Substation Seismic Performance
292 Advanced Heat Pump Water Heater Research
293 EPRI P102: Global Climate Policy Costs and Benefits
294 EPRI Program 182: Understanding Electric Utility Customers
295 EPRI Supplemental: End Use Loads Phase I PID# 072202
296 EPRI Supplemental: End Use Loads Phase 2 PID# 072092
297 EPRI Supplemental: Energy Efficiency Demo II PID# 072091
298 EPRI Sustainability Interest Group
299 Synchrophasor Linear State Estimator and PMU Data Validation and Calibration
300 BPA RAS 2020
301 Data Center Demand Response
302 Demand Response Potential of Heat Pump Water Heaters
303 Dimensionality Reduction and Early Oscillation Detection Using Online Synchrophasor Data
304 Predicting the Hydrologic Response of the Columbia River System to Climate Change
305 Data Integrity and Situational Awareness Tools (DISAT)
306 A Robust and Intelligent Bad-Data Detection Technique for PMU based Oscillation Monitoring & Control
307 Demand Response for Retail Supermarkets

308	Demonstration of Demand Response Solutions for RTU and Lighting Retrofits
309	Comprehensive Assessment of Climate Change Impact on the Hydrology of the Columbia River Basin: Characterizing and Reducing the Uncertainties from Various Sources on Streamflow Projection
310	New remedial action scheme (RAS) prototyping work to avoid cascading caused by intermittent output of renewable energy resources
311	Power Flow Control Reactor Demonstration on a BPA 115kV Line – ARPA-E/ORNL/ SPX
313	Power-Frequency Control
314	Load Research: End-Use Model Development
315	Develop Self-Monitoring Substation Protection and Control System
316	Combined Horizontal and Vertical Seismic Isolation System for Transformers
317	Anchorage Strength for Seismic Hardening of Transformers
318	Enhanced Residential Efficiency Analysis Tools for the Pacific Northwest
319	Multidimensional Learning on PMU Data for Event Detection, Characterization and Prediction
320	Modeling Mussels: Development of CE-QUAL-W2 Dreissena spp. mussel subcomponent
321	Real-Time Estimation of Generator Dynamic States and Damping Torque Using PMU Data
322	Development of a Predictive Reliability Test Method for Solid-State Luminaires, Light Engines, and Integral Lamps
323	Affordable Hybrid Heat Pump Clothes Dryer for the U.S. Residential Market
324	Faster Than Real Time State Estimation with Forecast for Multiple Contingency Analysis
325	Real-Time System Operating Limits (SOL) Computation and Visualization for BPA
326	Combined Space and WaterCO2 Heat Pump System Performance Research
327	NILM Accuracy Test Standard Development and Measurement Improvement
328	Real-Time Load Composition Estimation
329	DEMONSTRATION OF OUTDOOR LIGHTING FOR MAXIMIZING PERCEPTIONS OF SAFETY AND SECURITY
330	CO-OPTIMIZATION AND ANTICIPATIVE PLANNING METHODS FOR BULK TRANSMISSION AND RESOURCE PLANNING UNDER LONG-RUN UNCERTAINTIES
331	Using Distribution-Level Energy Assets to Help Optimize Regional Transmission Systems
332	Open Source Platform for Accelerating Synchrophasor Analysis
333	Strategic Energy Management of Industrial Subsystems Using Emerging Hardware and Software Platforms

335 Collaborative Defense of Transmission Cyber Attacks
336 Scaled Deployment and Demonstration of Demand Response using Water Heaters with CEA 2045 Technology
337 Home Battery System for Cybersecure Predictive EE and DR
338 Application of Combined Space and Water Heat Pump Systems to Existing Homes for Efficiency and Demand Response
339 Luminaire Level Lighting Control (LLLC) Demonstrations

340 Smart Ventilation Controls
341 Waste Water Heat Pump Design and Pilot Study
342 Framework for Quantification of Risk and Valuation of Flexibility in the FCRPS
343 Enhancing hydropower reliability through cavitation monitoring and noise condition assessment
344 Use of UV Radiation Technology to Prevent Settlement of Quagga Mussel Larvae
345 Advanced Visualization for Improving State Awareness for the BPA Power System
346 Cold Spray Deposition for Improved Service Life of New and Repaired Hydroelectric Turbines
347 Advanced Characterization of Wind Generation Forecast Error and Computation of Dynamic Balancing Reserves

348 Measurement-Based Voltage Stability Assessment
349 Demonstration of Applications for Baselining Power Oscillations
350 Power Plant Dynamic Performance Monitoring Center
351 Network Model Management
352 Development and Demonstration of a Phasor-Driven Tool for Adaptive Stability Model Calibration using GE PSLF

353 Improving Operator Situation Awareness by Phasor Measurement Unit (PMU) Data Visualization
354 Substation Seismic Performance with Supplemental Damping Devices
355 Evaluation of Technical Approaches to Increase Dynamic Transfers
356 Improving Tools for Real Time study Engineers using Node-Breaker Models
357 Techniques and Tools for System Level Validation of Transient Stability Models using PMU Data
358 A Wearable Sensory System for Hazardous Source Locating and Exposure Level Warning
359 Improved System Modeling for GMD and EMP Assessments
360 EPRI: P162 High Voltage Direct Current
361 Open External Control Analytics Platform Phasor Data
362 EPRI/BPA Power Flow Control Assessment
370 Coordinated Voltage Control to Enable Dynamic Transfers
371 Load Composition Analysis and Monitoring

372 Accelerating Real Time Stuides

374 Phase 2: Integrate Self-Monitoring Features of Substation Protection and Control System equipment by enhancing GOOSE I/O Monitoring and Using the sampled values protocol IEC 61850 standard

375 New Remedial Action Scheme to Avoid Cascading Caused by Intermittent Output of RE Resources

376 Time Series Learning on PMU Data for Event Detection

377 Improving Electrical Power Cyber Defense - Rapid Detection of Malicious Data Injections

378 Developing the Dynamic Contingency Analysis Tool (DCAT) for Cascading Outage Analysis for Western Inconnect using GE PSLF

379 An Efficient Approach to Developing Common WECC-wide Node/Breaker Model

380 Active Load Monitoring and Protection for Resilience Operation During Contingencies

381 WAMs Enhanced HVDC Contorl for Flexible and Stable Grid Operations

382 Unified Remedial Action Scheme Modeling and Simulation Tool for Grid Resiliency

383 Unmanned Aircraft System Power Equipment Inspection

384 In situ residual stress measurement for accurate fatigue lifetime assessment

385 Enhancing hydropower reliability through cavitation monitoring and noise condition assessment

386 Powin Energy

387 Heat Pump High Density Thermal Storage

389 Realizing high-accuracy low-cost measurement and verification for deep cost savings

390 Eval Alt Defrost for Res Heat Pump

391 Demonstration of Occupancy-Controlled Outdoor Area Lighting

392 Testing the Performance and Dynamic Control of Energy Efficienct Cellular Shades

393 Performance Testing of Phase Change Material in a US Army Reserve Bldg

394 Small Scale Multi-Family CO2 Heat Pump Water Heating

395 Advanced Synchrophasor Protocol (ASP)

396 SEL Tempus Project - DOE CEDS Initiative

397 Cyber Attack Resilient HVDC System

398 Natural Resources Canada GIC

399 EPRI P34: Tx Asset Management Analystics

400 Fiber Optic Current Sensors for use on the BPA Transmission System

403 EPRI P40 GIC

404 EPRI P162 Persistent Wi-Fi

405 Kaplan Turbine Oil Leak Elimination

406 Ambassador

407 EPRI: Flexible Operation of Hydropower Assets

408 Power Plant Validation Modelling Center

409	Coordinated Voltage Control to Enable Dynamic Transfers
410	Attack Tree
411	Modeling and Model Validation Tools User Group 2019-2021
412	Life360 - Lone Worker Locator Project