Subject: Online Form Submittal: Board and Commission Application
Date: Tuesday, December 20, 2022 6:30:40 PM

Board and Commission Application

Step 1

Application for Appointment to Whatcom County Boards and Commissions

Public Statement
THIS IS A PUBLIC DOCUMENT: As a candidate for a public board or commission, the information provided will be available to the County Council, County Executive, and the public. All board and commission members are expected to be fair, impartial, and respectful of the public, County staff, and each other. Failure to abide by these expectations may result in revocation of appointment and removal from the appointive position.

Title	Mr.
First Name	John
Last Name	Bosche
Today's Date	12/20/2022
Street Address	[redacted]
City	[redacted]
Zip	[redacted]
Do you live in & are you registered to vote in Whatcom County?	Yes
Do you have a different mailing address?	*Field not completed.*
Primary Telephone	[redacted]
Secondary Telephone	*Field not completed.*
Email Address	[redacted]

Step 2

1. Name of Board or Committee	Climate Impact Advisory Committee

Climate Impact Advisory Committee Position:	I have previous work or educational experience in renewable energy development.
2. Do you meet the residency, employment, and/or affiliation requirements of the position for which you're applying?	Yes
3. Which Council district do you live in?	District 2
4. Are you a US citizen?	Yes
5. Are you registered to vote in Whatcom County?	Yes
6. Have you declared candidacy (as defined by RCW 42.17A.055) for a paid elected office in any jurisdiction within the county?	No
7. Have you ever been a member of this Board/Commission?	No
8. Do you or your spouse have a financial interest in or are you an employee or officer of any business or agency that does business with Whatcom County?	Yes
If yes, please explain	I own Chinook Wind, a wind and solar energy consulting firm. The company is registered to an address in Whatcom County, but no clients are local to Whatcom County.
You may attach a resume or detailed summary of	Attached

experience, qualifications, & interest in response to the following questions	
9. Please describe your occupation (or former occupation if retired), qualifications, professional and/or community activities, and education	I am an internationally recognized expert in wind and solar energy. I own a consulting firm that employs approximately 50 people, including subsidiaries in Brazil, South Africa, and India. We provide technical consulting services to wind and solar developers globally.
10. Please describe why you're interested in serving on this board or commission	I have had a keen interest in climate change since I was a college student in the 1980s. My entire career has been focused on solving climate change by promoting development of renewable energy. I previously gave a presentation to this committee on the topic of wind energy development potential in Whatcom County.
References (please include daytime telephone number):	*Field not completed.*
Signature of applicant:	John Bosche
Place Signed / Submitted	Bellingham, WA
(Section Break)	

John Bosche

PROFILE: A skilled mechanical engineer and entrepreneur with over 32 years of experience in the wind and solar energy industries, who is also a registered US patent agent.

EXPERIENCE:

President and Principal Engineer
March 2017 – Present
ArcVera Renewables, Golden, CO
ArcVera Renewables was formed in March 2001 as a merger of Chinook Wind and V-Bar, two long-standing consulting firms in the renewable energy industry. Services include wind and solar resource assessment, technology reviews, performance testing, review of maintenance strategies and budgets, due diligence for project or portfolio acquisitions, and independent engineering. Clients include almost all major developers, owners, and investors in the wind and solar energy industries.

Principal Engineer
January 2001 – March 2017
Chinook Wind, Everson, WA
Developed and grew a business providing technical and engineering consulting services to the wind and solar industries. Services provided included wind turbine design, testing, and analysis, owner engineering, performance monitoring and evaluation, wind data collection and analysis, site selection, due diligence, and project management.

US Patent Agent
December 1991 - Present
Self Employed
Built and ran a small but profitable business as a registered US Patent Agent. Clients are from industry and academia and represent a wide variety of technologies.

Project Engineer
February 1998 – January 2001
Global Energy Concepts, Kirkland, WA
Worked with clients in the wind industry on a variety of projects providing technical advice regarding power curve measurements, turbine commissioning, SCADA system planning, design, and installation, evaluation of wind turbine retrofit options, investigation of lightning damage and icing effects, and development of operation and maintenance strategies. Also served as Principal Investigator in a research project investigating methods for self-erection of wind turbines.

Senior Engineer
February 1996 – February 1998
Dynamic Design, Tehachapi, CA
Provided engineering consulting services to the wind energy industry in California. A major focus of the work was field testing of wind turbines. Performed loads and dynamics tests on six turbines ranging in size from 100 kW to 500 kW. Contributed conceptual ideas and practical field experience to the design team working on the Wind Eagle, an innovative highly flexible wind turbine.

Research Assistant
January 1994 - January 1996
University of Texas at El Paso, El Paso, TX.
Assisted with several research projects in the area of wind energy. The research was in the areas of meteorology and site characterization and development of a variable speed wind turbine rotor.

Project Engineer
January 1991 - December 1993
Wind Harvest Company, Banning CA and Llwydcoed, South Wales
Built, tested and analyzed prototypes of three different models of the Windstar, an innovative vertical axis wind turbine. Set up a fabrication facility and installed a wind farm in South Wales, UK.

EDUCATION:

University of Texas at El Paso, El Paso, Texas
Master of Science, Mechanical Engineering, August 1996
Thesis topic was Control Strategy Options for Variable Speed Wind Turbines.

West Virginia University, Morgantown, West Virginia
Bachelor of Science, Mechanical Engineering, May 1989

Partial List of Past Consulting Clients:

Developers/Owners/Operators
BP Alternative Energy
Iberdrola
EDF
Windland
Energy Unlimited, Inc.
RES-USA
Sequoia Energy
Coastal Community Action Program
NextEra
SeaWest
Cannon Power Corp.
Dutch Energy
Exelon
Ridgeline Energy
Edison Mission Energy
First Wind
Invenergy
Infigen
Competitive Power Ventures
Element Power
Atlantic Power
Sun Edison
Duke Energy
Edison Mission Energy
EDPR
Everpower
InterGen
LS Power
Project Resources Corporation
Enel
GDF Suez

Wind Turbine and Component Vendors
GE Wind
Vestas America
Clipper Windpower
Ocean Wind Energy Systems
TPI Composites
Southwest Windpower
Suzlon Windpower
Wind Harvest Company
Valmont Industries

Banks and Investors
BlackRock
BTMU
CoBank
John Hancock
Goldman Sachs
KeyBank
JP Morgan
Union Bank of California
Trust Company of the West
Credit Agricole
Dexia
Diamond Generation
Prudential Capital Group
Societe Generale
State Street Corp.
UniCredit
First Reserve
Mizuho
Inter-American Development Bank
BBVA
HSBC
Banorte
Santander
Bank of America – Merrill Lynch

Utilities
Sempra Generation
AECI
Bonneville Power Administration
Electric Power Research Institute
Wisconsin Public Service
Basin Electric
Constellation Energy
Energy Northwest
Avista Utilities

Other
AIG Insurance
Leidos
Sargent & Lundy
CH2M Hill
Luminate
Congressman Jerry McNerney
Town of Laurel, NE
National Renewable Energy Laboratory

Consulting Services Provided:
Wind turbine power performance testing
Wind turbine structural testing
Wind turbine performance evaluation
Wind farm performance monitoring
Wind farm construction management
Wind turbine commissioning
Wind turbine component design
Meteorological test campaign design and implementation
Wind Resource Assessment
Wind site prospecting
Negotiation of land leases for wind sites
Appraisal of spare parts inventories
Economic feasibility studies
Proforma review
Contract review
Wind turbine technology review
Project due diligence review
Portfolio due diligence review
Expert witness report preparation
Draft and prosecute US patent applications

Wind Turbines Worked On:

Acciona AW125/3000
AOC 15/50
Clipper C96
DeWind D8.2
Enron Z-50
Fuhrlander 2.5
Gamesa G87
Gamesa G97
Gamesa G114
Gamesa G126
Gamesa G132
GE 1.5 se
GE 1.5 sle
GE 1.6 xle
GE 1.6 100
GE 1.7 100
GE 2.3-107
GE 2.3-116
GE 2.5-100
GE 2.7-128
GE 5.3-158
Kenetech MVS 33
Kenetech KVS 46
MHI-250
MHI-600
MHI 1000a
MHI 2.4/102
Micon 108
Nedwind N40
Nordex N80
Nordex N100
Nordtank 65
Repower MM92
Suzlon S88
Suzlon S97
Tacke 600e
Vestas V15
Vestas V27
Vestas V39
Vestas V47
Vestas V66
Vestas V90
Vestas V100
Vestas V110
Vestas V117
Vestas V120
Vestas V126
Vestas V136
Vestas V150
Bonus 65 kW
Bonus 1.3 MW
Siemens 2.3 MW
Siemens 3.0 MW
WEG MS4
Zond Z-40

Wind Industry Professional Service:

Board of Directors for Northwest SEED
Member of IEC Power Performance Testing Standard Committee MT12
Member of IEC Nacelle Lidar Wind Measurement Standard Committee PT50-3
Chair of Green Power – Optimizing Wind Power O&M 2011
Session Chair for Windpower 2006
Session Chair for Windpower 2007
Member of Technical Committee for 2002 Global Windpower Conference
Wind resource assessment subcommittee of the Idaho State Wind Working Group

Publications:

ArcVera Wind Energy Resource Assessment Benchmark White Paper: Published by ArcVera Renewables, May 2018

Wind Farm Operation and Maintenance Costs – Real Life Experiences and Summary of Projected Costs: WindAc, Cape Town, South Africa, November 2017

Wind Farm Operations and Maintenance: RECAM, Panama City, Panama, March 2017

SODAR to Met Tower Comparisons in a Variety of Terrain Types: American Wind Energy Association Conference Proceedings, June 2012

Discussion on Updated IEC Standard for Power Performance Testing: American Wind Energy Association Conference Proceedings, June 2012

Wind Turbine Performance Issues In Wind Resource Assessment: American Wind Energy Association Wind Resource Assessment Proceedings, September 2010

Wind Flow Modeling Software Comparison: American Wind Energy Association Wind Resource Assessment Proceedings, September 2009

Data: What We Need, Why We Need It, and How We Measure It: American Wind Energy Association Wind Resource Assessment Proceedings, September 2007

Wind Modeling Software Comparison: American Wind Energy Association Conference Proceedings, May 2007

Comparison of Methodologies for Power Performance Testing: American Wind Energy Association Conference Proceedings, May 2005.

GIS Mapping Tools to Promote Policies and Community-Scale Projects: American Wind Energy Association Conference Proceedings, May 2005.

Low Wind Speed Turbine Project Conceptual Design Study: Advanced Independent Pitch Control: May 2004.

Simple Arrays of Wind Turbines as a Practical Alternative to the Single Large Rotor Machines, American Wind Energy Association Conference Proceedings, May 2003.

Development of a Renewable Energy Resource Atlas of the West, American Wind Energy Association Conference Proceedings, June 2002.

TVP News Bulletin and Quarterly Stats Page, U.S. Department of Energy-Electric Power Research Institute Wind Turbine Verification Program, 1999-2001.

Wisconsin Low Wind Speed Turbine Project Third-Year Operating Experience: 2000-2001, U.S. Department of Energy - Electric Power Research Institute Wind Turbine Verification Program, EPRI TR-1004041, December 2001.

Iowa / Nebraska Distributed Wind Generation Projects First and Second-Year Operating Experience: 1999-2001, U.S. Department of Energy - Electric Power Research Institute Wind Turbine Verification Program, EPRI TR-1004039, December 2001.

WindPACT Turbine Design Scaling Studies Tehnical Area 3 -- Self-Erecting Tower and Nacelle Feasibility: March 2000 - March 2001. (2001). 72 pp.; NICH Report No. SR-500-29493.

Project Performance in the DOE-EPRI Wind Turbine Verification Program, America Wind Energy Association Conference Proceedings, June 2001.

Baseline Power Performance Test for the Z-50 Wind Turbine in Algona, Iowa, U.S. Department of Energy-Electric Power Research Institute Wind Turbine Verification Program, December 2001.

Baseline Power Performance Test for the Z-50 Wind Turbine in Springview, Nebraska, U.S. Department of Energy-Electric Power Research Institute Wind Turbine Verification Program, December 2001.

Baseline Power Performance Test for the AOC 15/50 Wind Turbine in Kotzebue, Alaska, U.S. Department of Energy-Electric Power Research Institute Wind Turbine Verification Program, December 2001.

Power Performance Testing Progress in the DOE/EPRI Turbine Verification Program. 15 pp.; NICH Report No. CP-500-30667.

Power Quality of Distributed Wind Projects in the Turbine Verification Program. 13 pp.; NICH Report No. CP-500-30407.

Power Performance Testing Activities in the DOE-EPRI Turbine Verification Program. 15 pp.; NICH Report No. CP-500-28589.

Review of Operation and Maintenance Experience in the DOE-EPRI Wind Turbine Verification Program. 13 pp.; NICH Report No. CP-500-28620.

Comparison of Projections to Actual Performance in the DOE-EPRI Wind Turbine Verification Program. 14 pp.; NICH Report No. CP-500-28608.

Wisconsin Low Wind Speed Turbine Project First- and Second-Year Operating Experience: 1998-2000, U.S. DOE - EPRI Wind Turbine Verification Program, EPRI TR-1000959, 2000.

Wind Turbine Verification Project Experience: 1999, U.S. Department of Energy - Electric Power Research Institute Wind Turbine Verification Program, EPRI TR-1000961, June 2000.

Baseline Power Performance Test for the Tacke 600e Wind Turbine in Glenmore, Wisconsin, U.S. Department of Energy-Electric Power Research Institute Wind Turbine Verification Program, December 1999.

Project Development Experience at the Iowa and Nebraska Distributed Wind Generation Projects, U.S. Department of Energy-Electric Power Research Institute Wind Turbine Verification Program, EPRI TR-112835, December 1999.

Baseline Power Performance Test for the Z-40FS Wind Turbine in Searsburg, Vermont, U.S. Department of Energy-Electric Power Research Institute Wind Turbine Verification Program, September 1999.

Wisconsin Low Wind Speed Turbine Project Development, U.S. Department of Energy-Electric Power Research Institute Wind Turbine Verification Program, EPRI TR-111438, December 1998.

Balancing Energy Capture and Structural Loads on Variable Speed Wind Turbines. Collection of the 1997 ASME Wind Energy Symposium Technical Papers Presented at the 35th AIAA Aerospace Sciences Meeting and Exhibit, 6-9 January 1997, Reno, Nevada. Washington, DC: American Institute of Aeronautics and Astronautics; pp. 309-318; NICH Report No. 23291.

Control Strategy Options for Variable Speed Wind Turbines, The University of Texas at El Paso, Master's Thesis, July 1996.

Control System Design for a Variable Speed Yaw Controlled Wind Turbine. Windpower '95: Proceedings of the Annual Conference and Exhibition of the American Wind Energy Association, 26-30 March 1995, Washington, DC. Washington, DC: American Wind Energy Association; pp. 187-193; NICH Report No. 21805.

Presentations:
Wind Turbine Aerodynamics – West Virginia University, October 1996.
Patent Law – University of Texas at El Paso Mechanical Engineering graduate seminar, February 1995.
Patent Law – University of Texas at El Paso Electrical Engineering graduate seminar, April 1995.
Cold Weather Operation Concerns – Utility Wind Interest Group workshop Anchorage, AK, June 2000.
Self Erecting Wind Turbine Workshop, National Renewable Energy Laboratory, September 2000.
Fundamentals of Onshore and Offshore Wind Energy, Gerson Lehrman Group, New York, June 2006
Fundamentals of Onshore and Offshore Wind Energy, Gerson Lehrman Group, San Francisco, June 2006
Fundamentals of Wind Energy, Gerson Lehrman Group, Boston, February 2007
Estimation of Annual Net Energy Yield at a Prospective Wind Farm, Presented to Various Banks, New York, June 2009
Wind Turbines 101, Presented to Chartis Insurance, July 2012
Power Performance Testing for Wind Farm Operations, Optimizing Wind Power O&M, Chicago, IL, Oct 2012
Optimizing Turbines and Components, Optimizing Wind Power O&M, Chicago, Il, Sept 2013
Opportunities In the US Wind Power Operations & Maintenance Service Sector, Gerson Lehrman Group, May 2016
Uncertainty in As-Built Versus Design Specifications of Wind Turbine Components, NREL, July 2016
Technology and Wind Resource Risks in the Modern Turbine Era, Infocast, San Diego, CA, February 2017