

CHRIS HOWELL

Project Manager / Noise Lead



Mr. Howell is a Project Manager in the Environmental Services group, with a specialty in traditional and renewable generation permitting, and is also Burns & McDonnell's Noise Lead. He manages the overall environmental permitting and licensing of complex facilities. He leads an experienced team of permitting specialists who conduct feasibility studies and assist clients with regulatory compliance and/or mitigation efforts.

Chris has performed projects in all 50 of the United States, Puerto Rico, Canada, Mexico, Asia, Africa, and the Middle East. His clients range from generation, transmission and distribution, to transportation and other industries. Many of his projects require public involvement and/or interaction with regulatory agencies and expert testimony. Mr. Howell is an Associate at Burns & McDonnell.

RENEWABLES

GSG Wind Farm | Leeward

Illinois | 2021 - Current

Project Manager: Chris led a team of professionals in preparing the Special Use Permit in two counties for the repowering of the GSG Wind Farm. Chris's team also prepared mapping, documentation, shadow flicker, decommissioning estimates, and sound measurements and predictions.

Multiple Confidential Sites – Solar Farms | AEP

OK and TX | 2021 – Current

Environmental Lead: Chris is leading a team of environmental professionals who are performing high-level Critical Issues Analyses and Environmental Liability Analyses on three large solar farm sites on or near existing generation facilities. Permitting activities for each of the specific resources (wetlands, T&E, cultural, etc.) are being performed at the sites and assistance in developing Requests For Proposals is being given.

Multiple Confidential Sites – Solar Farm | Minnesota Power

Minnesota | 2020 – Current

Environmental Lead: Chris is leading a team of environmental professionals who are performing high-level Critical Issues Analyses on four solar sites. Several of the sites will be located on existing ash landfills. The CIAs are being used to develop high-level cost estimates for new infrastructure.

Big Sky Wind Farm | Vitol

Illinois | 2020 - Current

Noise Lead: Chris led a team of professionals in preparing the Special Use Permit in two counties for the repowering of the GSG Wind Farm. Chris's team also prepared mapping, documentation, shadow flicker, decommissioning estimates, and sound measurements and predictions.

SPECIALITIES

- ▶ Siting, Permitting, and Licensing
- ▶ Due Diligence
- ▶ Project Management
- ▶ Predictive Noise Modeling
- ▶ Noise Monitoring & Analysis
- ▶ Public Testimony

EDUCATION

- ▶ BS, Mechanical Engineering

ASSOCIATIONS

- ▶ Institute of Noise Control Engineering

20 YEARS WITH BURNS & MCDONNELL

22 YEARS OF EXPERIENCE



CHRIS HOWELL

(continued)

Prosperity Solar Farm | Liberty Utilities

Missouri | 2020

Environmental Lead: Chris led a team of environmental professionals in performing high-level Critical Issues Analysis and general permitting assistance for a solar site located on an existing EPA Superfund site. The site is an existing contaminated materials repository, and the solar farm will be a beneficial reuse of the contaminated land. The CIA was used to microsite infrastructure and to help avoid existing deep-shaft mines.

Multiple Confidential Sites – Solar and Battery Energy Storage Systems | Vistra Energy

Connecticut, Illinois, Indiana, Massachusetts, Ohio, Pennsylvania, and Texas | 2018 – 2020

Environmental Lead: Chris directed a team of environmental professionals across the country who performed high-level Critical Issues Analyses on 27 solar and/or battery energy storage sites. The sites were proposed to be collocated with existing power plants as much as practical. The summaries of all CIAs were used to develop a scored decision matrix. The matrix was used by Vistra as a tool to decide on the most appropriate sites to handle the requested new infrastructure. Additional sites are being added and permitting activities are underway.

Multiple Confidential Sites – Solar Farm | Cleco

Louisiana | 2020 – Current

Environmental Lead: Chris is leading a team of environmental professionals who are performing high-level fatal flaw analyses on three large solar farm sites and developing a permitting matrix. Permitting activities for each of the specific resources (wetlands, T&E, cultural, etc.) will be performed once a site or sites are selected, if applicable.

Multiple Confidential Sites – Solar Farm | Competitive Power Ventures

Georgia | 2020

Environmental Lead: Chris led a team of environmental professionals who performed high-level Critical Issues Analyses on two large solar farms. Topics in the CIA included wetlands, threatened & endangered species, cultural resources, and limited Phase I ESA analyses. Chris also developed a permitting matrix and fatal-flaw analysis. The sites were completely greenfield. Projects are awaiting interconnection agreements and permitting activities will proceed if the projects are selected during the competitive-bid response to a request for proposal.

Speedway Solar | Duke Energy

North Carolina | 2020 – Current

Noise Lead: Chris managed acoustical analysis for a new solar energy plant consisting of multiple arrays of photovoltaic (PV) panels, inverters, transformers, switchgear, and associated equipment. Ambient monitoring and modeling has occurred, and public hearings will be held in front of the Cabarrus County Siting Board soon.

Pattersonville Solar Farm | CS Energy

New York | 2020

Noise Lead: Chris managed a team who monitored and modeled the proposed solar facility. Ambient measurements were completed in Fall 2020 to satisfy Conditional Use Permit criteria. Acoustical modeling was completed for a new solar energy plant consisting of multiple arrays of photovoltaic (PV) panels, inverters, transformers, switchgear, and associated equipment. The results of the study were used by CS Energy for public meetings and regulatory submissions.



CHRIS HOWELL

(continued)

Multiple Confidential Sites – Solar Farm | Omaha Public Power District

Omaha, NE | 2019

Environmental Oversight: Chris assisted the project team by lending guidance on specific approaches to siting and permitting a large solar farm. The team performed high-level Critical Issues Analyses for various sites. Chris contributed to the overall effort with guidance and also quality review.

Grissom Solar Farm | CS Energy

New York | 2019 – Current

Noise Lead: Chris performed acoustical modeling for a new solar energy plant consisting of multiple arrays of photovoltaic (PV) panels, inverters, transformers, switchgear, and associated equipment. The results of the study were used by CS Energy for public meetings and regulatory submissions. Measurements will be completed in Summer 2020 to satisfy Conditional Use Permit criteria.

McBride Solar/NC102 | Recurrent Energy Group (Canadian Solar)

North Carolina | 2018

Noise Lead: Chris managed acoustical analysis for a new solar energy plant consisting of multiple arrays of photovoltaic (PV) panels, inverters, transformers, switchgear, and associated equipment. The results of the study were used in public hearings, and Chris testified in front of the Cabarrus County Siting Board.

Crescent Ridge Wind Farm | Leeward

Illinois | 2020 – Current

Noise lead: Chris performed predictive noise modeling using CADNA to assist Leeward in the permitting and licensing phase for a proposed wind farm. Octave band analysis and existing wind farms cumulative impacts were performed. Chris provided written and oral testimony in front of the zoning board.

Panther Grove Wind Farm | TriGlobal Energy

Illinois | 2020 - Current

Noise Lead: Chris led a team that performed predictive modeling for the proposed Panther Grove Wind Farm. Chris helped with graphical representation of expected impacts. Chris will be providing testimony during the public county hearings.

Big Sky Wind Farm | BSW Dev Co

Illinois | 2020 - Current

Noise Lead: Chris led a team that performed predictive modeling for the proposed Big Sky Wind Farm. Chris helped with graphical representation of expected impacts and provided testimony during the public county hearings.

Shady Oaks II Wind Farm | Algonquin Power

Illinois | 2019 - Current

Noise Lead: Chris managed a project team that performed ambient sound monitoring and the predictive modeling during for development of the proposed Shady Oak II Wind Farm. Chris helped with graphical representation of expected impacts and he provided technical assistance at public meetings. Cumulative impacts of the Shady Oaks I Wind Farm were included. Chris will be providing testimony during the public county hearings.



CHRIS HOWELL

(continued)

Arriba Wind Farm | NGC Partners

Colorado | 2019

Noise Lead: Chris provided predictive modeling and micro-siting assistance during the development of the proposed Arriba Wind Farm. The results of the study were used by the client to pursue a special use permit for the project.

Rosewater Wind Farm | EDP Renewables

Indiana | 2019

Noise Lead: Chris provided predictive modeling and guidance on public interaction. The results of these studies are being used by the client for public meetings and to pursue a special use permit for the project.

Bitter Ridge Wind Farm | Scout Clean Energy

Indiana | 2019

Noise Lead: Chris managed predictive modeling and regulation interpretation and development assistance during the development of the proposed Big Blue River Wind Farm. The results of these studies will be used by the client to pursue a special use permit for the project.

Philip Wind Farm Permitting Studies | Philip Wind Partners, LLC

South Dakota | 2018

Noise Lead: Chris performed acoustical modeling for the proposed Philip Wind Farm in South Dakota. The results of the study were used by the client to pursue a special use permit for the project. Modeling was performed using CadnaA.

Prevailing Winds Wind Farm, Prevailing Winds LLC.

South Dakota | 2016 – 2018

Noise Lead. Chris managed an ambient survey team, performed predictive noise modeling using CadnaA, and assisted Prevailing Winds with public testimony during the licensing and permitting phase of a 200-MW wind farm. Chris testified before the SDPUC and assisted Prevailing Winds in gathering data to bolster their application.

Ruso Wind Farm Permitting Studies | Ruso Wind Partners, LLC

North Dakota | 2018

Noise Lead: Chris was Burns & McDonnell's performed acoustical modeling for the proposed Philip Wind Farm in North Dakota. The results of the study will be used by the client to pursue a special use permit for the project. Modeling was performed using CadnaA.

Thunder Spirit | ALLETE Clean Energy

North Dakota | 2018

Noise Lead: Chris managed and performed an acoustical assessment for ALLETE Clean Energy during the development, design, and construction of the Thunder Spirit II Wind Farm. The noise assessment study consisted of predictive modeling using the CadnaA software.



CHRIS HOWELL

(continued)

Big Sky Wind Farm Permitting Studies | Pattern Energy

Illinois | 2018 - 2019

Noise Lead: Chris managed a project team that performed ambient sound monitoring and the predictive modeling during for development of the proposed Big Sky Wind Farm. Chris helped with graphical representation of expected impacts and he provided technical assistance at public meetings. The results of the study were used by the client to pursue a special use permit for the project.

Mountain Breeze Wind Farm Permitting Studies | Leeward

Colorado | 2018 - 2019

Noise Lead: Chris provided predictive modeling and micro-siting assistance during the development of the proposed Mountain Breeze Wind Farm. The results of the study were used by the client to pursue a special use permit for the project.

Big Blue River Wind Farm Permitting Studies | Confidential Client

Indiana | 2018 - 2019

Noise Lead: Chris managed predictive modeling and regulation interpretation and development assistance during the development of the proposed Big Blue River Wind Farm. The results of these studies will be used by the client to pursue a special use permit for the project.

Nimbus Wind Farm Permitting Studies | Scout Clean Energy

Arkansas | 2018

Noise Lead: Chris performed predictive modeling during the development of the proposed Nimbus Wind Farm. The results of the study were used by Scout to pursue a special use permit for the project.

Lone Tree Wind Farm, Leeward

Illinois | 2017

Noise lead managed ambient monitoring and performed predictive noise modeling using CADNA to assist Leeward in the permitting and licensing phase for a proposed wind farm in Bureau County, IL. Octave band analysis and existing wind farms cumulative impacts were performed. Chris provided written and oral testimony in front of the zoning board.

Mendota Hills Wind Farm Repower, Leeward

Illinois | 2016 - 2017

Noise lead managed and ambient monitoring and predictive noise modeling using CadnaA to assist Leeward in the permitting and licensing phase for repowering an existing wind farm, using fewer, larger turbines. Comparisons were performed to the currently operating wind farm's impacts. Chris provided written and oral testimony for the project.

Milligan 1 and 3 Wind Farms, Aksamit

Nebraska | 2016

Noise lead performed predictive noise modeling using CadnaA to assist Aksamit in the permitting and licensing phase of 374-MW of turbines in Saline County, NE.



CHRIS HOWELL

(continued)

Broken Bow 2 Wind Farm | Sempra U.S. Gas & Power

Nebraska | 2015

Noise lead performed predictive modeling and commercial negotiation support for Sempra U.S. Gas & Power during development of a 75-MW wind energy project in central Nebraska.

Energía Sierra Juárez Wind Farm | Sempra Energy

Baja California, Mexico | 2013

Noise lead performed predictive noise modeling using CADNA to assist Sempra in determining specific wind turbine locations to avoid impacting nearby sensitive areas, and in the permitting and licensing phase of a 155-MW wind farm.

Stoneray Wind Farm | enXco

Pipestone and Murray Counties, MN | 2011 – 2012

Noise lead performing predictive noise modeling using CADNA to assist enXco in the permitting and licensing phase of a 100-MW wind farm. He will coordinate a team of specialists who will carry out ambient noise monitoring and prepare materials to be used for public demonstrations.

Lompoc Wind Farm | Acciona

Santa Barbara, California | 2010 - 2011

Noise lead responsible for performing predictive noise modeling using CADNA to assist Acciona in the permitting and licensing phase of a wind farm. He is also creating documentation regarding public interaction and action plans. He is also developing a monitoring plan for the project and will coordinate a team of specialists who will carry out ambient noise monitoring.

Top Crop 3&4 Wind Farm, Horizon Wind Energy

Illinois | December 2011

Noise lead performed ambient monitoring and predictive noise modeling using CadnaA to assist Horizon in the permitting and licensing phase of adding 300-MW of turbines to the existing TC1&2 Wind Farm. A cumulative analysis of various surrounding wind farms was completed the three counties as a whole using data from nearby, non-Horizon wind farms in conjunction with the Horizon project and various design options.

Twin Groves Phases 4 & 5, Horizon Wind Energy

Illinois | 2009 And 2011

Noise lead performed background noise monitoring and predictive noise modeling using CadnaA to assist Horizon in the permitting and licensing phase of a 500-megawatt wind farm. He successfully assisted with public testimony. Later, Chris assisted Horizon with the determining the noise implications that changing turbines would have to the already approved wind farm.



CHRIS HOWELL

(continued)

Rail Splitter, Horizon Wind Energy

Illinois | 2008 and 2011

Noise lead performed background noise monitoring and predictive noise modeling using CadnaA to assist Horizon in the permitting and licensing phase of a 500-megawatt wind farm. Later, Chris assisted Horizon in determining what cumulative noise impacts would occur when adding WindBOOST technology.

Bright Stalk, Horizon Wind Energy

Illinois | 2010

Noise lead performed background noise monitoring and predictive noise modeling using CadnaA to assist Horizon in the permitting and licensing phase of a 400-megawatt wind farm. He also assisted with public testimony.

Meadow Lake Phases 1-5, Horizon Wind Energy

Indiana | 2009 and 2011

Noise lead performed background noise monitoring and predictive noise modeling using CadnaA to assist Horizon in the permitting and licensing phase of a 500-megawatt wind farm. Later, Chris assisted Horizon in determining what cumulative noise impacts would occur when adding WindBOOST technology.

