



Fort Wayne ENGINEERS', Club

Engineers' News

February 2025

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www.FortWayneEngineersClub.org

February Tour



When: February 27, 2025 @ 6:30 P.M.

Where: 1720 Webster Rd., New Haven IN 46774

Details: Fort Wayne Astronomical Society (FWAS) is a 501c3 non-profit group incorporated in 1959. FWAS has spent over half a century working towards our mission by bringing the wonders of our universe to the eyes and minds of thousands of our visitors.

We have welcomed individuals, families, groups, astronomy enthusiasts and students of all ages and knowledge levels to peer through our scopes over the years. Star*Quest Observatory, which is owned and run by FWAS volunteers, opened in May of 2017 and has since offered free events, public stargazing sessions and private star parties for the community.

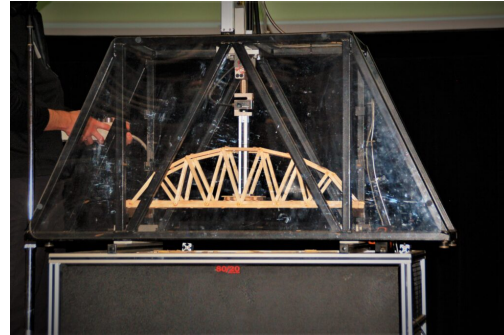
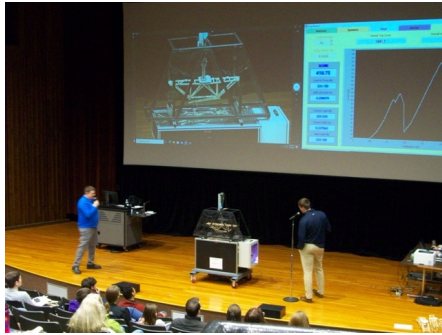
* Ages 10 and up. Dress appropriately for cold weather as part of the observatory will be open

during the observation as long as the weather cooperates.

For those interested, FWAS has an upcoming meeting open to the public. This is Feb. 18th, 2025 at 7:30 p.m. at PFW, room WU114 in the Walb Student Union.

<https://www.fortwayneastronomicalsociety.com/>

Bridge Building Contest



When: February 22, 2025

High School Competition 9:00 a.m. - 11:00 a.m.

Middle School Competition 1:00 p.m. - 3:00 p.m.

Where: PFW Walb Student Union, International Ballroom

Details: This event is not a scheduled FWEC tour, however it is a fun event to witness and is open to the public. Your participation is merely as a spectator. Watch the carefully crafted bridges constructed of only popsicle sticks get put to extreme weighted pressure. With a load cell and live data feed back, one by one the students get to witness who's design comes out on top.

FWEC Communications Coordinator Opening

FWEC has created a role of Communications Coordinator to be paid \$500/year. This would be to check the Club's e-mail once a week, assemble the newsletter 8-9 months per year using

items provided by other people, and change the website to be current with the newsletter. No experience necessary. We have quickly trained each other as needed over the years, and the abilities could be useful for other associations or purposes. Please contact Ryan Stark at info@FortWayneEngineersClub.org.

January Tour Summary



PBS Fort Wayne, a recent name change from PBS 39, is an independently owned and operated Public Service entity on land leased from Purdue University Fort Wayne. The law, regulations, and technologies that apply to Public Media and Public Broadcasting are too extensive to summarize in this report. On a national basis, Public Media is a suitable term to encompass both TV and radio Public Broadcasting as well as fiberoptic, overall internet, repeater, carrier current, program production, emergency services, maintenance of archival material, and a host of other endeavors. Not all of those aspects apply to this or most other facilities nationwide.

As in all our tours, continuous improvement has been inherent to survival while also retaining or adapting the past where pertinent. FWEC tours reveal that the Fort Wayne area has a range of excellence, detail, access, and opportunity that is second to none globally. In this case, our tour host is probably correct that our local PBS TV facility is among the best equipped and capable facility of its type in the nation. We were taken by surprise at the scale and possibilities encountered. Volunteers and interns of virtually any age or background are welcome. Donors, phone or e-mail input, and an advisory board guide PBS Fort Wayne on a daily basis.

The current PBS facility was built in 2003 with design in mind for continuous change in terms of technologies, responsibilities, and square footage needs. The transmitting tower location continues in use near their original studios at Butler x Hillegas Roads, about 5 miles (8 km) away. The studio and tower locations communicate via a dish system rather than cables. The 2003 design understood a transition from analog to digital was imminent and endeavored to provide both simultaneously as long as needed. Design also understood additional operational demands would occur, such as public emergency services. An example is providing weather radar (channel 39-5) after it was dropped by commercial broadcasting. PLEASE notice the commercial donors keeping life-saving 39-5 on the air 24/7.

Over-the-air broadcasts serve a 65 mile radius that include large areas where wireless systems are the only public communications option. Effective transmitter strength is roughly 150,000 watts. We did not ask about repeater stations which might rebroadcast signals further away.

Over-the-air services will continue as part of Congress's intent for essential services, but continuous improvement locally and globally currently includes discussions of next generations of digital standards. The transmission systems that use them will mostly be hardwired cable technologies. This is expensive. Donations and public participation matter.

The building was designed around an essentially fireproof electronics room from which all other functions radiate. Electronics racks, reminiscent of traditional electronics rooms, house servers ranging from 3 to 20 terrabytes. Very little is directly rebroadcast from sources (such as microphones, "satellite" dishes, fiberoptics, etc.) but rather first routed through servers for various purposes. Interspersed within the racks are a host of other items both current and historic (for some, hysterical) along with units that are just arrays of holes. These can flexibly interconnect anything with anything (assuming experienced personnel remain available) as needed using still-standard 1930's-style "patch cords", which are colored cords with "banana plugs" such as musical keyboards or electric guitars use. Components in or near the electronics racks include outmoded hard drive video recorders, DVD players, VHS players, two beta tape players (one for backup), one inch-wide tape reel-to-reel machines, and more. All has to be kept clean and maintained. Filtered and conditioned air is quietly ducted to components from ceiling and out through a raised floor. Also overhead, long lengths of patch cards in various hues radiate outwards to various sections of the building.

Old fashioned tape splicing for audio and film is no longer used but frequently mentioned, now entirely replaced by terrabytes of servers and expensive software. Flat screen monitors throughout the building often mimic “compression” meters, vector indicators, and oscilloscope-like wave form displays.

The smaller 3-4 terrabyte servers archive large amounts of broadcast material both present and past in modern space-saving ways. These replace entire basements of vulnerable tape and vinyl record storage, plus staff and systems to track and manage it all. Creating documentaries and many other programs are intensive processes requiring terrabytes of digital storage and as much as a year of research, script development, and more.

Some larger servers allow planning and construction of a week or more of intended programming, all in sequence. Software, such as Microsoft Excel, enable multiple specialists to interactively assemble broadcasts from their desks or conferences. Content on other servers (including immediately incoming national broadcasts such as news) is called up or authorized by preplanned reference alphanumeric. A few FWEC members recalled the old ways of handwritten program plans performed moment-by-moment by hand through the use of sequential racks of tape cassettes (some only seconds in duration), personally spoken on-air snippets, tape or pre-cued vinyl-record interludes, and live news reports. Emergency or breaking news might occur with the announcer hunched directly over a teletype machine, mentally editing poor wording on the spot. Done well, a listener would have no clue how exhausting it was.

The current “operations room” seems a quiet process of watching what is feeding into a broadcast, the orderly computerized assembly of the broadcast sequence, and what is actually being received by over-the-air receivers. The operator monitors about 60 ongoing video frames and has a 12 foot control console if needed. One person is usually enough to manage it.

The show production facilities require two large sections of the building. The more obvious section is a cavernous space surrounded by various specialized curtain systems, overhung with various specialty lighting systems, provided with a ceiling of sound control materials, filled with sets for weekly programs, and containing a few complex camera systems. The curtains are usually black or grey. Black curtains absorb light, perhaps sound. The grey are usually backlit and then fluoresce a standard true-color light. The lights include 500-3500 watt halogens whose heat and intensity are manipulated by filters, reflectors, and other devices. The most recent lights are roughly 100 watt 2' x 3' LED arrays which can duplicate a range of light at an equivalent of 1000 watts, plus may be readily overlain with physical filters. The LED units are remarkably cool and free of glare.

The sets are compact affairs, on raised platforms primarily so they can be on castors for best uses of space. Backgrounds are separate units, also on castors. Modern studio cameras are basically the small portable units used for field reports, but mounted on large mobile tripods and

fronted by multipurpose “boxes”. The boxes contain a one-way mirror that allows cameras to record the set with crystal nonreflective clarity. The mirror is set at a 45 degree angle, so it reflects a flat-screen monitor in the “box” towards the performers on the set. The monitor may communicate anything needed by the performers such as scripts or cues, while the performers are still looking into the camera. Below that box is another flat screen showing what is either being recorded, or currently broadcast such as charts or bullet points. The “box” also has red lights indicating the camera number, which view is being used at that moment, and other info. Performers have hidden earphones and personal microphones controlled by the “Producer.” Performers and off-camera crew also use hand signals. Modern equipment does a remarkable job of excluding unwanted noise or off-camera voices.

Cameras communicate with the control room(s) through cables approximately an inch in diameter, a size that is regarded as massive now-a-days. Use of cables assure maximum signal quality and resistance to interference.

The “control room” section of the building will typically have 5-7 people supporting the “filming” of a weekly program, and potentially 1-2 more people in an adjoining sound room for special shows or purposes. Roles include a “Producer” who has overall command and control. Someone sitting near the Producer mixes the available inputs of camera angles, charts, logos, and more. Other people in the room provide or tweak those inputs. One or two more individuals answer phones for call-in shows, type summaries of the intended caller for use by others, and monitor the caller(s) while waiting. “Quiet” earphones and often microphones connect everyone in control rooms and most folks working on or near the sets.

The sheer amount of control boards, flat screen monitors, software, recording devices, and other electronics dwarf what was normal even 25 years ago. Some of our tour participant had broadcast experience reaching back to the late 1960s.

Our sincere thanks to PBS Fort Wayne. Readers are encouraged to donate or inquire about engaging with this impressive public broadcasting service.

Interested in Hosting a Tour?

Contact us today!

Host a Tour

Items of Note

FWEC member Rod Vargo is Chair of the 30 year-old and all-volunteer [Utility Advisory Group](#), which formally advises Fort Wayne City Utilities and often City Council. Your comments are welcome at rodvargo@comcast.net

General Club Info

Fort Wayne Engineers Club dues are \$0. Donations are welcome but strictly voluntary. In recent years, club funds have helped support Discover-E, the Regional Science and Engineering Fair, annual bridge building contests in schools, academic awards, networking events, mentoring, our website, and facilitating free tours.

Please see FortWayneEngineersClub.org for updates on current Club activities, other news, and past newsletters.

Those participating in activities or hosting tours through FWEC do so strictly at their own risk, including disease exposures. Participation in club events is voluntary, free, nonprofit, and solely for the benefit of participants and the community at large. Anyone with an interest may participate unless restrictions are specified for specific events, such as minimum age or minimum safety attire.

FWEC Roster for FY2024-2025

President: Nathaniel Wisel

Vice President: Mindy Robinson

Secretary: Rod Vargo

Treasurer: John Magsam

First-year Board Members: Marna Renteria, Mike Magsam

Second-year Board Member: Dave Gordon, Bert Spellman

Third-year Board Member: Ryan Stark, *Open*

Editor of Engineer News: Nathaniel Wisel

Membership and Contact Chair: *Open*

Northeast Indiana DiscoverE Chair: *Open*

Job Posting and Resumes Listed

The club accepts both job openings from around the area, as well as resumes from those seeking employment. Please submit these to the following email address:

Info@FortWayneEngineersClub.org

Advertise in the Engineers' News

The FWEC provides advertising space within the Engineers' News. Advertisements are only \$10 per issue and limited to ½ page of content.

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