Wind Energy Conversion Systems Ordinance

Executive Summary

The proposed ordinance establishes a comprehensive zoning and permitting framework for Wind Energy Conversion Systems (WECS) in the unincorporated areas of Henderson County. It regulates the full life cycle of a wind-energy facility, beginning with land-use eligibility and pre-application studies and continuing through construction, operation, monitoring, enforcement, decommissioning, and reclamation.

Commercial WECS facilities are classified as industrial energy-generation uses and may be considered only as conditional uses in the Heavy Industrial (M-2) zoning district. Property located in any other zoning district must receive final approval of a zoning-map amendment rezoning all affected property to M-2 before the WECS Facility Permit may receive final approval. No variance, waiver, development plan, site plan, administrative interpretation, as-applied adjustment, or other land-use approval may authorize a Commercial WECS Facility in a zoning district other than M-2.

The ordinance does not approve a particular wind project. A future commercial facility would require a project-specific application, technical review, public notice and hearing, conditional-use authorization ordinarily by the Henderson County Board of Zoning Adjustment, Planning Commission review of the detailed development plan, site plan, and WECS Facility Permit, and a separate construction permit from the Codes Department. Fiscal Court would take final action on any required zoning-map amendment.

The principal protections include a one-mile setback from non-participating occupied structures and residential zoning district boundaries; separate setbacks from non-participating property lines, the WECS Facility boundary, specified infrastructure, roads, and railroads equal to the greater of 1,640 feet, 1.5 times total turbine height, or the calculated ice-throw distance plus 250 feet; a standard 200-foot height threshold, with greater height possible only through express conditional-use approval and written findings; numerical noise and shadow-flicker limits; extensive environmental, visual, transportation, emergency-response, and geotechnical studies; continuous post-construction noise monitoring; voluntary or evidence-based project-specific property-value protection; road-use and financial-assurance requirements; and decommissioning and reclamation obligations.

Background and Purpose

The proposed text is intended to provide reasonable, evidence-based standards for wind-energy development while protecting public health, safety, welfare, rural character, agricultural and residential land uses, public infrastructure, environmental resources, emergency-response capacity, property rights, and orderly development. The ordinance states that it is not intended to prohibit wind-energy development, but to identify locations and operating conditions under which such development may be compatible with surrounding land uses.

The legislative findings explain the basis for the ordinance's land-use classification, one-mile residential setback, noise requirements, cumulative-impact analysis, and property-value provisions. The ordinance also includes state-law savings and severability clauses so that its provisions apply only to the maximum extent permitted by controlling state and federal law.

The ordinance asserts local primacy under KRS 278.704(3) for its maximum-height limitation, setback requirements, and decommissioning requirements and states that those requirements are not subject to modification or waiver by the Kentucky State Board on Electric Generation and Transmission Siting through a request for deviation. Other standards are adopted under KRS Chapter 100 and the County's police powers and remain subject to applicable state or federal preemption.

Organization of the Proposed Ordinance

1. **Purpose, findings, and definitions.** Establishes the ordinance's objectives, legal framework, policy findings, applicability, and technical terminology.
2. **Land-use and siting requirements.** Identifies eligible zoning districts and regulates conditional-use approval, turbine height, setbacks, facility boundaries, and recorded waivers.
3. **Application and technical review.** Requires plans, professional studies, modeling, certifications, wind-resource data, and information sufficient for independent review.
4. **Agency coordination.** Requires early coordination with applicable federal, state, regional, and adjoining-county agencies.
5. **Performance and environmental standards.** Regulates noise, low-frequency sound, shadow flicker, lighting, visual impacts, wildlife, water, soils, vegetation, communications, and public safety.
6. **Transportation and infrastructure.** Requires traffic analysis, haul route planning, road-use agreements, restoration, and financial security for project-related damage.
7. **Operations and monitoring.** Addresses maintenance, waste, inactive turbines, site mapping, inspections, continuous sound monitoring, annual reporting, and complaint response.
8. **Property and community protection.** Includes cumulative-impact review, Good-Neighbor agreements, noise easements, a definition of substantial interference with quiet enjoyment, and a Real Property Value Protection Plan.
9. **Decommissioning and financial assurance.** Requires removal, disposal or recycling, reclamation, updated cost estimates, and financial security without a salvage-value offset.
10. **Approval, fees, and enforcement.** Establishes public-participation procedures, reimbursement accounts, insurance, permit expiration, penalties, suspension, revocation, and appeals.
11. **Non-commercial systems and MET towers.** Creates separate standards for small wind systems and meteorological towers.

Principal Commercial WECS Standards

Subject	Proposed Standard
Eligible zoning	Conditional use only in the Heavy Industrial (M-2) zoning district. Property in any other zoning district must be rezoned to M-2 through a lawful zoning-map amendment. No variance, waiver, administrative interpretation, or as-applied adjustment may authorize a Commercial WECS Facility in another zoning district.
Occupied structures	One mile from a non-participating occupied structure. A recorded Good-Neighbor waiver is allowed, but the turbine may never be closer than 1.5 times total turbine height to that occupied structure or any non-participating property line.
Residential zoning	One mile from a residential zoning district boundary. A recorded Good-Neighbor Easement and Setback Waiver may reduce the setback only for the affected residential zoning district boundary segment identified in the recorded Agreement. The waiver may not modify any other applicable setback or permit a Wind Generation Device to be located closer than 1.5 times its total height to any non-participating occupied structure or non-participating property line.
Property and facility boundaries	Greater of 1,640 feet, 1.5 times total turbine height, or the calculated ice-throw distance plus 250 feet from non-participating property lines and the WECS Facility boundary; no waiver.
Roads and railroads	Greater of 1,640 feet, 1.5 times total turbine height, or the calculated ice-throw distance plus 250 feet. A road setback may be reduced only through the affected authority's express waiver and approval by both the Planning Commission and the Henderson County Board of Zoning Adjustment; a railroad setback requires the railroad's express waiver and the same local approvals.
Third-party transmission and distribution lines and communication towers	Greater of 1,640 feet, 1.5 times total turbine height, or the calculated ice-throw distance plus 250 feet. A reduction requires written consent from the third-party transmission- or distribution-line owner or communication-tower owner and all other applicable approvals.
Maximum height	Up to 200 feet when the exact turbine height and location are shown on the approved conditional-use permit, detailed development plan, site plan, and WECS Facility Permit. Greater height requires express authorization through the conditional-use permit and related Planning Commission approvals, together with project-specific written findings by each approving body having jurisdiction.

Subject	Proposed Standard
Minimum blade clearance	75 feet generally and 100 feet in areas of agricultural use.
Noise at occupied structures	35 dBA Leq averaged over 10 minutes at any non-participating occupied structure, measured outdoors at the exterior façade of the most exposed side of the structure. A separate 35 dBA Lmax limit, using fast response, applies at any non-participating occupied structure, school, daycare, hospital, place of worship, or business open to the public.
Noise at property lines	45 dBA Lmax, using fast response, at a non-participating property line. Separate occupied-structure and property-line limits both apply where applicable.
Shadow flicker	No more than 10 hours per year at a non-participating occupied structure or other approved receptor, absent a recorded waiver.
Cumulative impacts	Analysis of existing, permitted, and sufficiently documented publicly proposed wind projects within 10 miles of the project boundary.

Separate As-Applied Adjustment. In addition to the specific waivers and exceptions summarized above, the ordinance allows an applicant to petition the Planning Commission for an as-applied adjustment of the maximum-height limitation or a setback requirement when strict application would afford no reasonable opportunity for lawful wind-energy development within the Heavy Industrial (M-2) zoning district. The Planning Commission must conduct a public hearing and may grant only the minimum adjustment necessary based on written findings supported by substantial evidence. An as-applied adjustment may not modify or waive the exclusive M-2 zoning requirement or authorize a Commercial WECS Facility in another zoning district. No adjustment may place a turbine closer than 1.5 times its total height to a non-participating occupied structure or non-participating property line or eliminate a required recorded Good-Neighbor Easement and Setback Waiver.

Staff Analysis of Major Ordinance Categories

1. Land-Use Classification and Zoning

The ordinance treats commercial WECS facilities as industrial-scale energy-generation facilities because of their size, operational characteristics, transportation demands, visual profile, acoustic effects, emergency-response considerations, and infrastructure requirements. Commercial WECS facilities would be prohibited in agricultural, residential, commercial, and every other zoning district unless all affected property is rezoned to the Heavy Industrial (M-2) zoning district through a lawful zoning-map amendment.

An applicant seeking a zoning-map amendment to rezone property to the Heavy Industrial (M-2) zoning district may submit a siting-feasibility analysis addressing zoning, transmission and road access, setbacks, environmental constraints, infrastructure constraints, and other relevant factors. If the applicant submits a siting-feasibility analysis, the Planning Commission shall consider that evidence and make written findings addressing whether the proposed property is reasonably suitable for rezoning to M-2, whether the proposed

Commercial WECS Facility can satisfy the applicable standards of the ordinance, and whether the requested zoning-map amendment is consistent with the Comprehensive Plan and KRS Chapter 100. The ordinance does not authorize an as-applied adjustment of the exclusive M-2 zoning requirement. An as-applied petition may address only the maximum-height limitation or a setback requirement and may not authorize a Commercial WECS Facility in any zoning district other than M-2.

2. Application Materials and Technical Studies

The commercial application is intended to provide enough information for a complete technical and land-use review before the public hearing. Required materials include owner consent, project specifications, professionally prepared site and construction plans, property and receptor mapping, environmental studies, noise modeling, shadow-flicker calculations, visual simulations, geotechnical investigations, transportation and emergency-management plans, socioeconomic information, agency correspondence, and decommissioning and financial-assurance documents.

The Planning Commission may waive or partially waive Environmental Report requirements when the applicant demonstrates that a published Draft Environmental Impact Statement prepared under NEPA or a Public Service Commission Industrial Siting Application substantially satisfies the corresponding ordinance requirements. Requirements and performance standards expressly applicable to every facility remain in effect.

As part of the Commercial WECS Facility Permit application, the applicant must identify structures, utilities, rights-of-way, and other relevant features within 5,280 feet of the facility boundary. Before the Commercial WECS Facility Construction Permit is issued, the applicant must submit a GIS shapefile or other approved geospatial file identifying all receptors within 1.5 miles of the project boundary. The geospatial submission must include parcel boundaries, receptor locations and types, supporting metadata, and the input data and assumptions used for shadow-flicker modeling, noise-propagation modeling, and visual simulations.

A continuous 12-month, site-specific wind-resource campaign is required only for a Commercial WECS Facility with an aggregate rated capacity of at least 10 megawatts or proposing a turbine exceeding 200 feet in total height. Non-commercial systems are exempt from this requirement. Where required, measurements must use an IEC-compliant meteorological tower, LiDAR, or SODAR system, be recorded at intervals no greater than 10 minutes, and achieve at least 95% data availability. National wind datasets may supplement but cannot replace the required site-specific measurements.

3. Setbacks, Height, and Waivers

The ordinance establishes a separate as-applied adjustment process when an applicant demonstrates that strict application of the maximum-height limitation or a setback requirement would afford no reasonable opportunity for lawful wind-energy development within the Heavy Industrial (M-2) zoning district. Following a public hearing, the Planning Commission may grant only the minimum adjustment necessary based on written findings supported by substantial evidence. An adjustment may not modify or waive the exclusive M-2 zoning requirement, authorize a Commercial WECS Facility in another zoning district, place a turbine closer than 1.5 times its total height to a non-participating occupied structure or non-participating property line, or eliminate a required recorded Good-Neighbor Easement and Setback Waiver.

The one-mile setback applies to non-participating occupied structures and residential zoning district boundaries. The minimum setback from a non-participating property line, the WECS Facility boundary, a third-party transmission or distribution line, a communication tower, a federal, state, county, or municipal road right-of-way, or a railroad is the greater of 1,640 feet, 1.5 times total turbine height, or the calculated

ice-throw distance plus 250 feet. The property-line and facility-boundary setbacks are not subject to an ordinary setback waiver. Limited reductions for specified infrastructure, roads, and railroads require the written consent or express waiver of the affected owner or authority and all applicable local approvals. The ordinance's separate as-applied adjustment process is addressed below. Distances are measured to the specific structure wall, zoning boundary, property boundary, facility perimeter, right-of-way, or easement identified by the ordinance.

Staff recommends the one-mile separation because commercial wind turbines are industrial-scale structures whose acoustic, visual, lighting, shadow-flicker, safety, and emergency-response effects may extend beyond the project boundary. In developing this recommendation, staff considered the height and rotor diameter of modern turbines, Henderson County's rural development pattern and low ambient nighttime sound levels, the proximity of residences to agriculturally and industrially suitable land, and the potential combined effects of noise, low-frequency sound, amplitude modulation, shadow flicker, nighttime lighting, visual dominance, ice or debris throw, and impacts on neighboring property use and marketability. Several of these effects are not fully addressed by a setback based solely on turbine height.

The one-mile distance is intended as a reasonable default land-use separation standard, not as a determination that adverse effects will occur at every property within one mile or cease precisely at that distance. The recorded Good-Neighbor process provides limited flexibility where an affected owner knowingly and voluntarily accepts a reduced one-mile setback. It does not itself reduce the separate property-line or WECS Facility-boundary setback. Under the ordinary setback-waiver provisions, only the specific infrastructure, road, and railroad exceptions stated in the ordinance may reduce the greater-of setback formula. Separately, the ordinance establishes an as-applied adjustment process under which the Planning Commission may adjust a setback requirement when strict application would afford no reasonable opportunity for lawful wind-energy development. Any such adjustment requires a public hearing and written findings supported by substantial evidence, must be limited to the minimum adjustment necessary, may not reduce the applicable 1.5-times-total-height floor, and may not eliminate the required recorded Good-Neighbor Easement and Setback Waiver. The ordinance's independent noise, shadow-flicker, lighting, safety, and operational standards continue to provide baseline protection. A Good-Neighbor Easement and Setback Waiver must be voluntary, recorded in the County Clerk's Office, submitted to the Codes Administrator in accordance with the applicable permit-timing requirement, and maintained for the life of the project through decommissioning. Even with a waiver, no turbine may be placed closer than 1.5 times total turbine height to a non-participating occupied structure or any non-participating property line. A Good-Neighbor waiver does not reduce the separate non-participating property-line or WECS Facility-boundary setback and does not automatically waive noise, shadow flicker, lighting, decommissioning, road-use, or other standards.

A Good-Neighbor Easement and Setback Waiver must be executed and recorded, and a recorded copy must be submitted to the Codes Administrator before final action on the conditional-use permit, consolidated zoning-map-amendment proceeding, or WECS Facility Permit, whichever occurs first.

The standard total-height threshold is 200 feet. A turbine exceeding 200 feet may be authorized only as an express component of the conditional-use permit and related Planning Commission approvals and only upon the required written findings. Those findings must establish that the exact turbine model, dimensions, and location have been identified; all applicable setback, noise, shadow-flicker, lighting, blade-clearance, structural-safety, and other objective performance standards will be satisfied; applicable FAA, structural-engineering, geotechnical, emergency-response, fire-response, transportation, infrastructure, and visual-impact requirements have been adequately addressed; the requested additional height will not materially

increase off-site noise, shadow flicker, visual dominance, aviation risk, emergency-response difficulty, road or infrastructure risk, or incompatibility with surrounding land uses; no objective performance standard will be violated by the additional height; and identified off-site impacts associated with the additional height will be avoided or minimized through enforceable mitigation measures and conditions of approval.

4. Noise and Low-Frequency Sound

The default operational limits are 35 dBA Leq averaged over 10 minutes at any non-participating occupied structure; 35 dBA Lmax, using fast response, at any non-participating occupied structure, school, daycare, hospital, place of worship, or business open to the public; and 45 dBA Lmax, using fast response, at any non-participating property line. Measurements at occupied structures and the listed sensitive or public receptors are taken outdoors at the exterior façade of the most exposed side of the structure. Compliance is required at both an occupied structure or other applicable receptor and a non-participating property line whenever separate limits apply.

Staff's recommendation is intended to protect sleep, residential use and enjoyment, and compatibility with Henderson County's relatively quiet rural environment. The World Health Organization's Guidelines for Community Noise identify 30 dBA LAeq inside bedrooms at night as a sleep-protection benchmark and 45 dBA LAmax inside bedrooms for individual noise events. The WHO Night Noise Guidelines for Europe subsequently recommended an annual-average nighttime target of less than 40 dB Lnight, outside to protect the public, including vulnerable groups such as children, older adults, and chronically ill people (World Health Organization, 1999 and 2009).

The WHO Environmental Noise Guidelines for the European Region conditionally recommends reducing average wind-turbine noise below 45 dB Lden but does not establish a separate wind-turbine Lnight recommendation because the available nighttime evidence was considered insufficient. Lden and Lnight are long-term exposure metrics and are not directly interchangeable with a 10-minute Leq or fast-response Lmax operational standard. Staff therefore relies on WHO guidance as a public-health benchmark, not as a representation that WHO specifically requires Henderson County's proposed 35 dBA exterior limit. The proposed limit is a more protective local land-use standard intended to provide a margin for nighttime residential use, variable building construction, open or partially open windows, low rural background levels, and predictable periods of stable atmospheric propagation.

A 2023 study of 1,076 adults age 60 or older used in-bedroom sound measurements and actigraphy and found that increasing indoor nighttime sound was associated with lower sleep efficiency, longer sleep-onset latency, more time awake after sleep onset, and greater sleep fragmentation. The results remained consistent when the researchers evaluated noise events of at least 45 dB. The study was cross-sectional and evaluated total indoor noise rather than wind-turbine noise specifically, but it supports consideration of both average sound and identifiable maximum events (Yamagami et al., 2023).

Noise modeling must address predictable worst-case propagation, including stable nighttime and thermal-calm conditions. The study must use octave-band data, evaluate A-, C-, and G-weighted sounds where required, document background conditions, identify control measures, and be prepared and supervised by a qualified acoustical professional with Full Member status in the Institute of Noise Control Engineering.

The ordinance requires A-, C-, and G-weighted modeling, octave-band analysis, and evaluation of tonal characteristics. It does not establish a separate numerical dBC or dBG operational limit. The enforceable numerical limits are stated in dBA and are supplemented by modeling, disclosure, and the prohibition against tones exceeding the referenced ANSI tone-to-noise criteria.

The operational limits apply only to sound attributable to the WECS facility. Traffic, wildlife, aircraft, agricultural activity, weather, emergency operations, and other unrelated sources are excluded. Turbine-only sound must be determined through documented background correction, turbine-on/turbine-off testing, regression analysis, synchronized operating data, or another reproducible method. Contaminated intervals must be identified and excluded, and a violation may not be found when an apparent exceedance falls within the combined measurement uncertainty of the approved protocol.

A property owner located within one mile of the proposed project boundary, where modeled or measured WECS noise may exceed the default limits, may execute a recorded Noise Easement for the specifically identified parcel. For that parcel, the operational limits become 45 dBA Leq over 10 minutes and 45 dBA Lmax at the receptor specified in the easement. The easement requires approval by the County Attorney's Office and Planning Commission, does not change the limits applicable to other parcels, and must disclose potential health, animal, financing, marketability, and property-value considerations.

Within 90 days after commercial operation begins, the owner must conduct post-construction testing at representative receptors. At least one permanent Type 1 sound meter must be maintained on the property for which the facility owner has lawful access and at a location approved as representative of predominant downwind conditions. It must continuously record 10-minute Leq, Lmax, wind speed, wind direction, temperature, and humidity data. Annual compliance reports, raw-data retention, complaint-based third-party testing, and corrective measures—including curtailment or noise-reduction operating modes—are required.

5. Shadow Flicker, Visual Effects, and Lighting

Shadow flicker and blade reflection are limited to 10 hours per year at each non-participating occupied structure or other receptor identified in the approved application, unless the affected owner executes a recorded waiver. The applicant must provide the underlying model data and identify mitigation measures where the limit may be exceeded.

The visual review requires at least 25 representative vantage points, worst-case simulations, and evaluation under recognized visual-resource methods. An approving body may impose lawful, project-specific conditions within its jurisdiction addressing applicable color, height, setback, lighting, screening, or other objective standards. Lighting is generally required to use dark-sky-compatible fixtures, subject to FAA requirements. When approved by the FAA, the facility must implement an Aircraft Visual Warning System (AVWS), with later retrofit required within one year after an AVWS is FAA-approved and available.

Intra-project collectors and gathering lines operating at 34.5 kilovolts or less must generally be buried unless the applicant demonstrates that burial would conflict with applicable law, technical requirements, or other controlling standards.

6. Environmental, Cultural, and Agricultural Resources

The environmental provisions address birds, bats, threatened and endangered species, migration corridors, wildlife critical areas, wetlands, riparian areas, water supply, drainage, floodplains, erosion, dust, invasive species, vegetation, historic resources, archaeological resources, and agricultural soils. Wildlife studies and mitigation measures must follow the recommendations or requirements of the Kentucky Department of Fish and Wildlife Resources and applicable federal agencies.

Additional measurable wildlife provisions include a minimum 328-foot setback from identified rims to reduce risks to soaring raptors, unless another distance is recommended by the responsible wildlife agency. Where preconstruction surveys, post-construction monitoring, or recommendations of the Kentucky

Department of Fish and Wildlife Resources or the United States Fish and Wildlife Service demonstrate a material risk of increased bat mortality, the owner or operator must implement seasonal or nighttime curtailment, including a cut-in speed greater than six meters per second, or another mitigation measure determined by the Planning Commission, after consultation with the applicable wildlife agency, to provide equivalent or greater protection. This requirement applies regardless of the number of turbines. Compliance with an enforceable state or federal mitigation plan may satisfy the requirement when the Planning Commission determines that the plan provides equivalent or greater protection.

A site-specific geotechnical report must evaluate subsurface conditions, karst, sinkholes, mine spoil, groundwater, settlement, slope stability, foundation design, crane pads, access roads, and other construction constraints. The Planning Commission may require additional investigation, peer review, redesign, relocation, monitoring, construction limitations, or additional setbacks when site conditions create an identified risk.

7. Public Safety and Emergency Response

The ordinance requires compliance with applicable building, fire, electrical, engineering, and aviation standards. Application materials must evaluate ice throw, blade failure, fire, structural collapse, aircraft safety, communications interference, unauthorized climbing, access, potable water, wastewater, and groundwater protection. The applicant must submit a written emergency-management plan for review and comment by the appropriate fire department or district, the County Emergency Management Administrator, and the County Sheriff. If the facility extends into another county, the plan must address multi-county emergency notification and coordination and must be reviewed by officials of the other affected county. Kentucky Emergency Management must also review the plan before final permit approval. Following construction and before operation, the plan must be supplemented or revised if variations in the completed facility would materially affect the original emergency-management plan.

As-built drawings are required, and facility structures generally may not be constructed more than 50 feet from the locations identified in the approved permit application. Any relocated structure must continue to satisfy every applicable setback and performance standard.

8. Transportation and Public Infrastructure

A Kentucky-licensed professional engineer must prepare the transportation plan and traffic study. The application must identify proposed haul routes, vehicle and component dimensions, roadway conditions, necessary improvements, legal access, anticipated impacts, mitigation, and costs.

Before construction, the applicant must enter into a Road Use and Maintenance Agreement acceptable to the County. A preconstruction baseline survey is required; the developer is responsible for restoring damaged roads and infrastructure to their original or better condition, and financial assurance must be provided in an amount sufficient to complete required repairs.

9. Operations and Continuing Compliance

The owner or operator must maintain the facility, control weeds, properly handle waste and hazardous materials, update site mapping, remove discarded components, submit periodic compliance certifications, and identify turbines that remain inoperative. The Codes Administrator, with assistance from authorized County staff and qualified consultants, may conduct inspections, review monitoring information, issue notices of violation, require corrective action, and enforce applicable permit conditions and performance

standards. Upon a substantiated complaint, the County may require the Facility Owner to fund a third-party compliance test reasonably designed to replicate the reported conditions.

Discarded, replaced, damaged, or obsolete blades, nacelles, tower sections, electrical equipment, and other facility components must generally be removed from the site within 90 days after completion of the associated replacement, repair, or removal work. Outdoor storage of discarded components is permitted only temporarily and with County approval. A commercial turbine that remains inactive for six continuous months must generally be removed unless the operator provides a refurbishment or reactivation plan and schedule acceptable to the Planning Commission. The ordinance states that its routine and scheduled maintenance paragraph and its six-month inactive-turbine removal requirement may not apply when the WECS Facility is regulated by the Kentucky Public Service Commission.

A commercial permit expires if construction does not commence within one year unless an extension is granted. A single-phase project must generally become operational within two years after commencement. Approved phases must generally become operational within two years of their commencement, and all phases must be operational within seven years after permit approval unless extended for good cause.

10. Decommissioning, Reclamation, and Financial Assurance

Decommissioning begins within six months after the end of a facility's useful life or after six continuous months without generation, unless the Planning Commission grants an authorized extension. The plan requires removal and lawful disposal or recycling of turbines, towers, nacelles, blades, electrical equipment, foundations, cabling, buildings, and other improvements unless a specific alternative is approved. Underground components generally must be removed completely; any approved partial removal must ordinarily extend at least 48 inches below original grade.

The site must be restored substantially to its preconstruction condition or another condition approved by the landowner and County. Final reclamation includes grading, topsoil replacement, erosion control, revegetation, weed control, and achievement of at least 90% of the native or adaptive background vegetative density before financial assurance may be released.

Financial assurance must be in place before construction and remain until final reclamation. A Kentucky-licensed professional engineer must prepare the cost estimate without reducing the amount for salvage value. Estimates must be updated every three years, and the amount must be reviewed at least every five years. The County requires the greater of the ordinance-based amount or any applicable state-law minimum. The ordinance also authorizes the Planning Commission to grant a case-by-case variance from the WECS Facility decommissioning, reclamation, and financial-assurance requirements after considering whether the applicant or landowner has demonstrated good cause.

11. Property-Value Protection

The Real Property Value Protection Plan does not automatically apply to every property within one mile and does not presume that a loss will occur. An applicant may voluntarily offer an agreement to eligible non-participating owners of record within one mile. An agreement may be required as a project-specific condition only when competent appraisal or market evidence supports an identifiable project-attributable risk and the condition is directly related and reasonably proportional to that risk. Compensation is available only when actual diminution is established through USPAP-compliant appraisals by independent, state-certified appraisers.

The applicant and owner each select an appraiser, with the applicant paying the appraisal costs. If the two valuations differ by more than 10%, a third appraiser is selected and the median controls; otherwise, the first two values are averaged. An eligible owner may invoke an accepted agreement once within 10 years after final approval, and payment is generally due within 30 days after final determination. When an agreement is voluntarily offered and accepted, or lawfully imposed as a project-specific condition, the applicant must maintain surety based on a documented estimate of reasonably foreseeable obligations.

Review and Public-Participation Process

Step	Ordinance Requirement
Pre-application meeting	Applicant meets with Planning Commission staff, the County Engineer, and the Codes Administrator and provides an agency outreach plan.
Application-submittal meeting	Staff performs a preliminary component check; this does not replace the formal completeness review or predict the outcome.
Completeness review	If incomplete, the Commission identifies deficiencies within 30 days. Additional information requested is generally due within 30 days.
Local notice	Written notice to owners within five miles and cities or towns within 20 miles; notice to adjoining counties located within 10 miles; and newspaper publication twice in two different weeks at least 30 days before the hearing.
Conditional-use decision	The Henderson County Board of Zoning Adjustment ordinarily conducts the required hearing and finally decides the conditional use. The Planning Commission may decide it only through an authorized consolidated map-amendment proceeding.
Planning Commission and Fiscal Court	The Planning Commission recommends any map amendment, with final action by Fiscal Court. Following conditional-use authorization, the Planning Commission decides the detailed development plan, site plan, and WECS Facility Permit.
Construction permit	After all required land-use approvals, the Codes Department reviews final plans and proof of compliance and issues any required construction or building permit.
Appeal	Appeals from final actions are taken exclusively in the time and manner provided by KRS 100.347 and other controlling law.

Administration, Fees, and Enforcement

A commercial applicant must establish a $50,000 reimbursement account when filing the WECS Facility Permit application and replenish the account whenever the balance falls below $20,000. A separate $50,000 reimbursement account is required for construction-permit review and inspections and must likewise be

replenished whenever the balance falls below $20,000. The Planning Commission and its staff remain responsible for application review, while the Codes Administrator is responsible for construction-permit administration, inspections, monitoring, and enforcement. The applicable County department shall record costs and submit periodic invoices to the appropriate account. If the applicant fails to provide a required payment, review and other nonemergency project work may cease as provided by the ordinance. Inspections or enforcement actions necessary to address an imminent threat to public health, safety, or welfare shall not be delayed. Unused application-review funds shall be credited to the construction-permit account or returned, as applicable, and unused construction-account funds shall be returned after construction is complete and the project is operational.

The owner or operator must maintain general liability insurance with limits of at least $5 million per occurrence and $10 million in the aggregate and provide annual proof of coverage. A transferee assumes all applicable permits, financial-assurance, decommissioning, road-use, reporting, and operational obligations. The Codes Administrator is the designated administrative official responsible for administering and enforcing commercial and non-commercial WECS permits. Enforcement responsibilities include inspections; review of monitoring reports; issuance of notices of violation and corrective action requirements; citations, when authorized; suspension or revocation in accordance with applicable procedures; and referral of unresolved violations to the County Attorney. The Planning Commission retains the approval and review responsibilities assigned by the ordinance but does not conduct inspections or administer routine permit enforcement.

Enforcement Stage	Consequence
Notice of violation	Upon competent evidence, written notice identifies the violated requirement, supporting evidence, corrective action, correction period, and procedure for contesting the determination.
Confirmed noise exceedance	Must be corrected within 30 days or as otherwise ordered by the County. Corrective measures may include curtailment or noise-reduction operating modes.
Penalties or citations	Second and subsequent violations may be subject to the penalties authorized by KRS 100.991 and any separately adopted and legally applicable code-enforcement procedure. Citations may be issued when authorized, and each day a violation continues may constitute a separate offense to the extent provided by law.
Suspension or revocation	Except for temporary emergency suspension or curtailment necessary to address an imminent threat, suspension or revocation requires written notice, a reasonable opportunity for an evidentiary hearing under the applicable County procedure, and a written decision containing findings of fact.
Repeated, willful, or imminent conditions	Repeated or willful noncompliance may support suspension or revocation after an evidentiary hearing and written findings. An imminent threat may support temporary curtailment, with a prompt hearing upon request.

Enforcement Stage	Consequence
County costs	Actual and reasonable inspection, testing, consulting, and enforcement costs may be recovered when authorized by law or an enforceable permit condition, subject to an itemized statement and an opportunity to contest the charges.

A permit may be suspended or revoked by the Codes Administrator for materially false application information, failure to comply with permit conditions after notice and an opportunity to correct, failure to maintain necessary land rights, prolonged inactivity, repeated or willful noncompliance, or other violations identified in the ordinance. Any required notice and hearing procedures must be completed before final suspension or revocation, except for temporary action necessary to address an imminent threat.

Non-Commercial WECS and Meteorological Towers

The ordinance separately regulates non-commercial systems and meteorological towers. A non-commercial WECS is limited to 45 kilowatts and a maximum total height of 50 feet. A parcel containing five (5) acres or less is limited to one (1) device. A parcel containing more than five (5) acres is limited to two (2) devices unless the Planning Commission approves additional devices.

The 45-kilowatt capacity threshold is intended to distinguish customer-scale wind generation from commercial wind-energy development. It corresponds with KRS 278.465, which defines an eligible electric generating facility for purposes of Kentucky's net-metering statutes as a customer-owned facility located on the customer's premises, primarily used to supply all or part of the customer's own electricity requirements, and having a rated capacity of not more than 45 kilowatts. Use of this threshold is a local zoning classification and does not independently determine eligibility for net metering or replace applicable utility-interconnection, electrical-safety, or Public Service Commission requirements. A qualifying non-commercial system may export surplus electricity to the grid when authorized under applicable law and utility requirements.

A temporary MET tower may remain for no more than three years, with one possible renewal not exceeding an additional three years. Permanent MET towers must comply with the ordinance's monopole and visibility requirements, while temporary guyed towers must use the required bird-diversion measures.

For non-commercial WECS facilities, the following additional standards apply.

1. **Setback and clear zone:** 1.5 times total device height.
2. **Noise:** 35 dBA Leq averaged over 10 minutes at the nearest non-participating property line.
3. **Safety and abandonment:** unsafe equipment must be repaired or removed within 14 days. A device inactive for 12 continuous months is subject to the ordinance's notice, response, corrective-action, and removal procedures.

Staff Considerations

The proposed ordinance is substantially more detailed than a conventional zoning use standard. Its administration will require coordinated review by Planning Commission staff, the County Engineer, Codes staff, legal counsel, emergency services, outside technical consultants, and applicable state and federal

agencies. The reimbursement-account provisions are intended to place project-specific review and inspection costs on the applicant rather than the general public.

Because many requirements rely on specialized acoustic, engineering, environmental, appraisal, and visual-impact evidence, future decisions should be supported by clear findings tied to the ordinance's numerical standards, professional-review requirements, and the specific evidence in the project record. Conditions of approval should identify required mitigation, reporting, monitoring, financial security, and corrective-action obligations with sufficient detail for later enforcement.

The Planning Commission's present consideration of the zoning text should remain distinct from the review of any development proposal. Adoption of the ordinance would establish the standards and procedures under which a future application must be evaluated; it would not establish that any specific site or project satisfies those standards.

Technical Sources Supporting Performance Standards

World Health Organization. Guidelines for Community Noise. Geneva: WHO, 1999; Night Noise Guidelines for Europe. Copenhagen: WHO Regional Office for Europe, 2009; and Environmental Noise Guidelines for the European Region. Copenhagen: WHO Regional Office for Europe, 2018.
Yamagami, Y., Obayashi, K., Tai, Y., and Saeki, K. "Association Between Indoor Noise Level at Night and Objective/Subjective Sleep Quality in the Older Population." SLEEP 46, no. 5 (2023): zsac197. https://doi.org/10.1093/sleep/zsac197.
Technical measurement standards: ANSI/ASA S12.9, Quantities and Procedures for Description and Measurement of Environmental Sound; ANSI/ASA S12.18-1994 (R2023), Procedures for Outdoor Measurement of Sound Pressure Level; and ISO 9613-2:2024, Acoustics—Attenuation of Sound During Propagation Outdoors—Part 2.

Staff Recommendation

Staff recommends approval of the proposed WECS zoning text and transmittal of a favorable recommendation to the Henderson County Fiscal Court, subject to Planning Commission revisions and final review by appropriate County officials and legal counsel for legal form, statutory consistency, cross-references, and administrative enforceability.