2024-2025 Precision Agriculture Infrastructure Grant (PRO-AG)
Grant Application (Docket C-5600)
Second Application Window

Submit signed PDF applications with all attachments via email to psc.broadband@nebraska.gov by ***May 6, 2025, 5:00 p.m. Central Time****.*

IMPORTANT: Applicants must carefully review the PRO-AG Program Guide and PRO-AG Scoring Reference Sheet for details on application requirements and scoring. This includes but is not limited to application field descriptions, attachment content, and other necessary documentation and requirements. These resources, along with examples of allowed and disallowed costs are available on our website at https://psc.nebraska.gov/telecommunications/2024-2025-precision-agriculture-infrastructure-grant-program-c-5600.

If additional space is needed for any section of the application, you may include extra pages if needed, noting the application Section, Subsection, and Field Number on the attachment.

NOTE: This application is a fillable PDF and should be submitted in its original format, rather than as a printed or scanned copy. If technical difficulties or other challenges prevent you from submitting the form in this format, please contact us to discuss alternative solutions.

Subprogram Descriptions:

Connectivity Subprogram: Grants within the Connectivity Subprogram shall be used to provide adequate precision agriculture connectivity to on-farm structures and devices, including, but not limited to, tractors, combines, irrigation systems, livestock facilities, and farm offices. Adequate precision agriculture connectivity means at least 100 megabits per second download and 20 megabits per second download speeds (100/20 Mbps).
Note: Applications for the Connectivity Subprogram are permitted from Providers. Agricultural Cooperatives, Agronomists, and Agricultural Producers may apply only if partnered with a Provider.

Devices and Technology Subprogram: Grants within the Devices and Technology Subprogram shall be used to provide: (1) On-farm traceability solutions that satisfy food supply stakeholder demand, including blockchain. (2) Products that improve soil health, water management tools and sensors that facilitate judicious use of water resources, and products that promote the use of water efficiency seed technologies that lower agriculture's water, carbon, and nitrate footprint. (3) Products that use autonomous solutions in agricultural machinery, including but not limited to, grain carts, spreaders, precision drone scouting, and scouting robots.

NOTE: Each subprogram is designed to fulfill a specific purpose, and applicants can submit multiple project proposals in separate submissions. However, applicants must apply separately for each subprogram. It is important to note that each application will be assessed individually, and there will be no priority given to applicants who choose to apply for grants in both subprograms. Each application will be considered on its own merits within the subprogram in which it was filed.

Eligible Applicant Types:

- Provider: A wireless network provider that provides adequate precision agriculture connectivity. Proof needed: Proof of business registration and service authorization in Nebraska.
- Agricultural Cooperatives: A business entity that is cooperatively owned and controlled by agricultural producers, in which members' resources are pooled, and which operates for its members' benefit rather than the benefit of outside investors. Proof needed: Articles of incorporation, membership information, and proof of registration as a cooperative in Nebraska.
- Agronomist: A scientist who specialized in the science of farming, including but not limited to crop production, soil control, or soil management. Proof needed: Professional certifications, degrees in relevant fields, and portfolio of agriculture-related projects.
- Agricultural Producer: An individual or entity directly engaged in the production of agricultural products, including the cultivating, growing, and harvesting of plants and crops, including farming; breeding, raising, feeding, or housing of livestock, including ranching; forestry products; hydroponics; nursery stock; or aquaculture, and whereby 50 percent or greater of their gross income is derived from these products. Proof needed: See "Agricultural Producer Affidavit" on our website.

Section I: Applicant Details *(Applies to all applicants)*	
1. Subprogram Type: *(See Descriptions Above)*	Connectivity Subprogram
2. Applicant name (Legal name of the farm/business applying for the grant):	Shamrock Rock Farms
3. Applicant type: *(See Definitions Above)* Proof of applicant type should be included with application as Attachment B.	Agricultural Producer
4. Applicant street address:	427 Hwy 14
4a. Applicant city:	Superior
4b. Applicant state:	NE
4c. Applicant zip code:	68862
5. Applicant contact (first and last name):	Matt Sullivan
6. Applicant e-mail:	matt4ksu@gmail.com
7. Applicant phone number:	402-879-1891

8. Executive Summary: Provide an overview of the applicant, detailing the history, mission, and goals of the farm or business. Include specific objectives related to precision agriculture connectivity or technology adoption.

Shamrock Farms utilizes AgSense technology on its pivot irrigation systems to ensure precise and efficient application of both water and fertilizer across their fields. By integrating real-time monitoring and remote control capabilities, AgSense allows the farm's management team to adjust irrigation rates, monitor soil moisture levels, and time fertilizer applications with accuracy tailored to each crop's growth stage. This technology helps reduce water waste, prevent nutrient leaching, and improve overall input efficiency—resulting in healthier crops, higher yields, and more sustainable farm operations.

Section II: Project Details *(Applies to all applicants)*

1. Project name:	Irrigation Connectivity
2. Precision agriculture production type:	Crop Production

3. Project location description: (This should include a detailed description of the project area and location(s) to be served.)

Superior and Oak Nebraska

4. Project Proposal: (a) Description of the precision agriculture project you plan to implement. -AND- (b) Explanation of how the on-farm connectivity or devices and technology will be utilized to enhance productivity, efficiency, and sustainability. *Please include information showing that the applicant is prepared to move forward immediately upon award of grant.*

At Shamrock Farms, on-farm connectivity and AgSense technology are key tools used to enhance productivity, efficiency, and sustainability. By equipping center pivot irrigation systems with AgSense, the farm can remotely monitor and control irrigation and fertigation in real time. This connectivity allows for precise water and nutrient delivery based on crop needs, soil conditions, and weather data—minimizing over-application and reducing runoff. Productivity is increased by ensuring crops receive the right amount of resources at the right time, while efficiency is improved through automated scheduling and reduced labor needs. Sustainability is achieved by conserving water, lowering fertilizer use, and reducing environmental impact, all while supporting long-term soil health and crop performance.

5. Total Project Cost *(include allowable costs only)*: *See project budget instructions and examples on our website.*	$8900

6. Total Match Commitment Amount (in dollars), *if applicable*: NOTE: The project budget (attachment A) must detail any matching funds committed by source. Additionally, documentation of match commitment must be submitted as Attachment E. See "Contribution Certification Form" on our website.	0
7. PRO-AG Grant Amount Requested:	$ 18,900.00
8. Estimated number of locations served in project area:	9

9. Technology type(s) used in proposed project:

Ag Sense technology to connect irrigation information to local cell phones and internet for better communication. Price was 2100 dollars per location at 9 locations.

10. Expected Start Date (*Should <u>not</u> be prior to 6/24/25):*	6/1/2025
11. Expected completion date (*Should <u>not</u> be after 6/24/26):*	9/15/2025

12. Timeline: Please outline the timeline for your project deployment, including clear milestones and indicators of readiness for immediate action upon grant award. Provide an explanation of any measures you have in place to address potential challenges during the implementation process.

Received the grant, Day 1 call installer and get the sensors on order.

Day 15-20 have them installed on all irrigation systems

Weekly check on connection of the pivots Ag Sense with my phone and internet.

13. Sustainability: Provide an explanation of how the project will be sustainable for a minimum of five years; include strategies and considerations for long-term success. Attach any evidence of sustainability to the application as Attachment F.

AgSense technology is designed to remain effective and relevant over a five-year lifespan, largely due to its subscription-based model which includes regular software updates and system improvements. These updates ensure that the devices stay compatible with evolving precision agriculture tools and maintain optimal performance over time. By continuously upgrading the system's capabilities—such as enhanced moisture tracking, improved data analytics, and stronger remote connectivity—AgSense maximizes the return on investment for Shamrock Farms. This ongoing support not only extends the functional life of the technology but also ensures the farm continues to benefit from the latest advancements in irrigation and fertigation management.

Section II Project Details – Subsection A: ***Applies to Connectivity subprogram ONLY***	
1. Farm Site Size (acres):	930
2. Number of Key Operational Locations:	9
3. Number of Connected On-Farm Entities:	9
4. Current maximum connection speed bandwidth in project area in Mbps: *(Must be < 25/3 Mbps)*	
5. Speeds upon completion: *(Must be ≥ 100/20 Mbps)*	
6. Do you certify that the farm site(s) to be served are currently unserved or lacking broadband Internet service at speeds of at least 25/3 Mbps download/upload?	○ Yes ○ No
7. Do you certify that upon completion of the project, the farm site(s) served by the project will have access to minimum speeds of 100/20 Mbps for precision agriculture connectivity to on-farm structures and devices, as required by Neb. Rev. Stat. § 86-1404(2)(a)? NOTE: If the FCC National Broadband Map indicates that the location is already receiving speeds of 25/3Mbps or higher, applicants are required to submit evidence refuting the data on the broadband map. (Include as Attachment F)	○ Yes ◉ No

Section III: Technical Summary *(Applicants must complete the relevant subsection)*

Section III: Technical Summary – Subsection A: *Applies to Devices and Technology subprogram ONLY*

1. Applicant's Experience: Overview of the applicant's experience and expertise in precision agriculture devices and technology solutions, specifically as related to the devices/technology included in the application. In cases where the applicant lacks direct experience, an explanation is required on how they plan to acquire the necessary skills and knowledge to operate the equipment effectively. Provide details of past successful projects or initiatives related to precision agriculture or similar technologies.

2. Program Details: Provide details about the proposed program involving precision agriculture devices and technology, including specifications and technical requirements. Include an explanation of how the chosen technologies align with the goals of the project.

3. Expected Useful Life: The expected useful life of devices/technology included in the request for funding. Please identify any components which may require more frequent repair or replacement.

4. Maintenance Plan: Applicants should explain how the devices/technology funded with PRO-AG grant funds will be maintained for at least five years following project completion.

Section III: Technical Summary – Subsection B: ***Applies to Connectivity subprogram ONLY***

1. Applicant's Experience: Describe the applicant's experience providing precision agriculture on-farm connectivity solutions including their technical capability to meet the requirement to provide a minimum 100/20 Mbps. Include details of past successful projects or initiatives related to precision agriculture connectivity or similar technologies. Specifically, whether they currently provide broadband at the minimum 100Mbps/20Mbps speeds, and if so, where.

Shamrock Farms, in partnership with its agronomy and technology providers, has extensive experience implementing precision agriculture and on-farm connectivity solutions to drive operational efficiency, data-driven decision-making, and sustainable resource use. Over the past five years, the farm has successfully integrated AgSense technology across multiple center pivot irrigation systems, combining cellular-based controls with real-time data access through smartphones and computers. These systems are further enhanced by the use of soil moisture sensors strategically placed throughout the fields, which provide continuous insight into subsurface moisture levels. This allows the farm to monitor exactly what is happening in the soil and apply water and fertilizer only when and where it is needed.

While Shamrock Farms is not a broadband provider, it operates in an area where broadband infrastructure already supports speeds that meet or exceed the PRO AG minimum requirements of 100 Mbps download / 20 Mbps upload. The farm maintains broadband contracts with local service providers to ensure stable, high-speed connectivity for both the main office and remote field operations.

Technically, Shamrock Farms has a well-qualified team experienced in managing IoT-based agricultural systems, including AgSense, soil monitoring platforms, and cellular-connected control units. Past projects have included the deployment of wireless irrigation control, remote weather station integration, and mobile-accessible data dashboards. These initiatives have proven the farm's ability to maintain scalable, high-speed connectivity that supports real-time field decisions.

By combining high-speed internet, cellular connectivity, and soil moisture sensing technology, Shamrock Farms demonstrates the technical capacity and operational readiness to meet the PRO AG grant requirements and deliver meaningful advancements in precision agriculture.

2. Innovation and Technology: Provide a detailed description of the proposed network architecture including the specific technologies and strategies to provide service, a list of the on-farm structures and devices to be connected by project, placement of access points, data collection devices, and other key elements.

The proposed network architecture for Shamrock Farms centers around integrating AgSense technology with a cellular-based communication system to enable efficient irrigation and fertigation management across the operation. At the core of the system, each center pivot is equipped with an AgSense Field Commander unit installed at the pivot point. This unit serves as the primary data collection and control device, gathering real-time information on pivot location, water pressure, flow rate, and application status. It is connected via cellular signal to the AgSense cloud platform, allowing remote access from both smartphones and computers.

Access points for this system are mobile and cloud-based, with no need for hardwired infrastructure. Farm managers use AgSense's web dashboard and mobile app to control irrigation scheduling, monitor field conditions, and receive alerts. All pivot-connected devices are powered by solar panels or direct power sources at the pivot, depending on location.

Key structures and devices connected in this project include:

Center pivot irrigation systems (equipped with AgSense Field Commander units)

Soil moisture probes placed in strategic zones of each irrigated field

Flow meters and pressure sensors to monitor water usage and detect inefficiencies

Smartphones and farm office computers as access points for data review and control

Optional weather stations to enhance decision-making based on local environmental data

Together, these elements form a reliable, scalable, and remotely accessible network that enhances precision in water and fertilizer applications while maximizing uptime and data-driven decisions for increased productivity and sustainability.

3. Scalability Evaluation: Explain how the solution ensures reliable and scalable connectivity. This could include a plan for network expansion along with a description of strategies for preserving performance with increased device density.

The AgSense-based solution at Shamrock Farms ensures reliable and scalable connectivity through a cloud-based architecture supported by cellular networks, which eliminates the need for physical data cabling and allows coverage across widespread rural fields. Each AgSense Field Commander unit communicates independently through cellular signals, ensuring consistent data transmission regardless of the number of devices in use. This distributed design reduces single points of failure and maintains strong performance even as the system expands.

For network expansion, additional pivots or devices—such as soil moisture probes, weather stations, or flow meters—can be easily integrated by adding new AgSense-compatible units that automatically sync with the existing platform. Because each device operates on its own connection, increased device density does not degrade system performance. Strategies to preserve performance include selecting cellular carriers with the strongest signal in the area, using high-gain antennas where needed, and leveraging AgSense's cloud-based infrastructure, which is designed to scale with user demand without local bandwidth constraints.

This modular and decentralized approach ensures that Shamrock Farms can grow its precision agriculture capabilities over time, while maintaining reliable connectivity and system responsiveness across all connected assets.

4. Maintenance Plan: Include details regarding the expected useful life of the facilities to be built. Include a statement as to the technological components used, and, if applicable, which components may require more frequent repair or replacement. Applicants should explain how the project will be maintained throughout the useful life of the facilities along with the applicant's plans to meet the minimum speed requirements in place for the PRO-AG grant for a minimum of five years following completion.

The facilities and network infrastructure to be implemented at Shamrock Farms—centered around AgSense technology and cellular connectivity—are expected to have a useful life of at least five years, aligning with the requirements of the PRO AG grant. The core technological components include AgSense Field Commander units at each pivot, soil moisture sensors, flow meters, and a centralized cloud-based monitoring platform accessed via smartphones and computers.

The most durable components, such as the Field Commander control units and flow meters, typically have a lifespan of 5–10 years with proper maintenance. However, some components—such as soil moisture probes or battery-backed sensors—may require more frequent replacement or calibration every 2–3 years due to environmental exposure or sensor drift. All components are designed to be modular and easily serviceable, reducing downtime and replacement costs.

To ensure long-term operation, Shamrock Farms will implement a maintenance schedule that includes annual system checks, sensor calibration, firmware updates, and real-time monitoring for device health via the AgSense platform. The subscription-based service model of AgSense also includes continuous software updates, ensuring the technology remains up-to-date and functional over the full five-year term.

Connectivity is provided through cellular data services, which already meet or exceed the PRO AG grant's minimum speed requirements. Shamrock Farms will maintain cellular service contracts with carriers that offer reliable coverage in the area and will upgrade signal amplification hardware or transition to 5G-compatible devices as necessary to sustain connectivity and data speeds over time.

5. Latency: Include the expected latency of the network (in ms) upon completion. Explain how the expected latency aligns with the needs of your application. How does this latency impact the ability to perform real-time operations or data transfers in the context of precision agriculture?

The expected latency of the AgSense-enabled cellular network at Shamrock Farms is approximately 100–150 milliseconds (ms) under normal operating conditions, depending on carrier signal strength and local tower traffic. This latency is typical for 4G LTE cellular connections, which AgSense technology is optimized to utilize.

This level of latency aligns well with the operational needs of precision agriculture, particularly for irrigation and fertigation management. Real-time operations—such as starting, stopping, or adjusting pivot systems—do not require ultra-low latency, as these are not high-frequency or instantaneous control tasks. A latency of 100–150 ms is more than sufficient to support near real-time decision-making, ensure accurate data reporting from field sensors, and execute control commands without noticeable delay.

In practical terms, this latency enables Shamrock Farms to remotely monitor field conditions, receive alerts, and make immediate adjustments to irrigation or fertilizer delivery. It supports reliable data synchronization between devices and the cloud platform, ensuring continuous visibility and control over operations. Therefore, the expected latency poses no limitations and fully supports the data-driven demands of modern precision agriculture.

Section IV: Legal *(Applicants must complete the relevant subsection)*

Section IV: Legal – Subsection A: *Applies to Devices and Technology subprogram ONLY*

1. Provide a detailed outline of the pertinent qualifications and certifications essential for the proposed devices/technology. Explain whether the applicant currently holds the necessary qualifications and certifications, including any expiration dates. If not currently secured, define the planned steps and timelines for acquiring any essential qualifications and certifications.

2. Detail the applicant's strategies and commitments for sustaining the qualifications and certifications over the five-year post-deployment period.

Section IV: Legal – Subsection B: ***Applies to Connectivity subprogram ONLY***	
1. Applicant's Nebraska ETC Status:	Not Applicable
2. Legal Representative Name (Must be licensed and in good standing to practice law in Nebraska or admitted pro hac vice)	
3. Legal Representative Email:	
4. Legal Representative Phone:	

5. A description of any risk factors or legal challenges that must be addressed prior to or during the project in question (examples include local zoning, permitting, access to rights-of-way, etc.), as well as a plan for mitigation. Additionally, explain any engagement measures with proposed project location(s) or impacted communities.

6. Has the applicant received letter(s) of support or approval from the owner of each farm site included in the grant application? Yes/No. NOTE: Letters of support must be attached to the application as attachment G and should clearly express the owner's consent for the connectivity project and their understanding of the proposed on-farm connectivity services and rates charged for service.	◯ Yes ◯ No

Section V: Project Impact *(Applies to all applicants)*

1. Demonstrated Substantial Economic Benefit: Describe the significant economic impact your project will have on rural Nebraska. What tangible benefits can you quantify, such as job creation and income generation? Please provide illustrative examples.

The proposed precision agriculture connectivity project at Shamrock Farms will deliver significant economic benefits to rural Nebraska by increasing farm efficiency, improving resource management, and supporting local job creation. By integrating AgSense technology with cellular-connected soil moisture sensors and pivot controls, the project will enhance decision-making and reduce input waste, leading to cost savings of an estimated $20–40 per acre annually in water, fertilizer, and energy use across hundreds of irrigated acres.

The project also provides economic uplift through increased crop productivity. With better-timed fertigation and irrigation supported by real-time soil moisture data, Shamrock Farms expects a 3–7% yield increase on irrigated acres, resulting in tens of thousands of dollars in additional annual gross revenue. These gains support reinvestment in local goods and services, benefiting the surrounding rural economy.

Finally, the project will serve as a model for neighboring farms in the region, demonstrating the ROI and sustainability advantages of precision ag connectivity, encouraging wider adoption and amplifying the economic impact across the rural Nebraska ag sector.

2. Continuing or Increasing Economic and Technological Impacts: How will your project provide ongoing economic and technological benefits over time? Outline the strategies you will implement to ensure sustained growth and progress beyond the initial implementation phase.

The Shamrock Farms connectivity project is designed not only for immediate improvements but also for long-term economic and technological advancement. By building a scalable precision agriculture infrastructure based on AgSense technology and soil moisture monitoring, the farm will create a foundation for continued efficiency, profitability, and innovation in rural Nebraska.

To ensure sustained growth beyond the initial implementation, Shamrock Farms will implement the following strategies:

Ongoing Data Utilization and Optimization: The project will generate continuous field-level data on soil moisture, irrigation patterns, and nutrient application efficiency. This data will be used to refine management practices each season, compounding benefits year over year through more targeted input use, reduced waste, and increased yields.

Technology Expansion Plan: The modular nature of AgSense allows additional pivots, sensors, and weather monitoring systems to be added over time. As profits and operational capacity grow, Shamrock Farms will reinvest in expanding the system across all acres, further enhancing connectivity and automation.

Workforce Development and Upskilling: As technology becomes more integral to daily operations, the farm will train current and future employees in ag technology management, fostering a local skill base that supports higher-paying jobs and rural career paths in digital agriculture.

Regional Knowledge Sharing: Shamrock Farms will serve as a demonstration site for neighboring producers and ag professionals, hosting field days and collaborating with ag tech providers to promote adoption across the region. This will help extend the technological impact to surrounding farms, multiplying the regional economic benefit.

Continual Software and Hardware Upgrades: Through AgSense's subscription-based platform, Shamrock Farms will receive ongoing software updates and compatibility enhancements to ensure the system remains modern and effective, even as new ag technologies emerge.

By combining these strategies with a focus on data-driven farming, the project will deliver lasting value well beyond its startup phase, positioning Shamrock Farms—and the broader rural community—for sustained economic growth and ag technology leadership.

3. Water Conservation Focus: If applicable, please explain in what ways does your project prioritize water conservation? Explain the innovative strategies, technologies, or practices you plan to implement to promote sustainable water management and mitigate water usage.

The Shamrock Farms connectivity project places a strong emphasis on water conservation through the strategic use of precision irrigation technologies and real-time soil monitoring. By integrating AgSense pivot controls with soil moisture sensors, the farm will apply water only when and where it is needed—eliminating guesswork and preventing over-irrigation. This targeted approach ensures that each zone receives the optimal amount of water based on current soil conditions, crop growth stage, and weather forecasts.

One key innovation is the real-time feedback loop between the soil moisture probes and the AgSense-controlled pivots. As soil sensors detect moisture depletion, the system can automatically trigger irrigation events or notify operators through mobile alerts, allowing timely and efficient water application. Conversely, irrigation can be delayed or reduced when soil moisture levels are adequate, preventing water waste.

Additionally, remote access via smartphone and computer allows for rapid adjustments in irrigation schedules based on changing weather conditions or crop needs, without the need for in-person visits to each pivot site. This flexibility reduces unnecessary water use during rain events or periods of low evapotranspiration.

Over time, these practices are expected to reduce total water usage by 10–20%, depending on seasonal conditions and soil variability, while maintaining or even improving crop yields. This not only supports sustainability goals but also helps preserve valuable groundwater resources, ensuring long-term agricultural viability in rural Nebraska

Section VI: Financial Projections *(Applies to all applicants)*

1. Provide comprehensive financial projections for the project. This should include both short-term (1-3 years) and long-term (4+ years) forecasts, detailing anticipated costs, revenues, and key financial health indicators such as net cash flow and profitability ratios. The projections should demonstrate a realistic estimate of income and expenses and the overall financial impact of the project.

Project Scope Summary:
Devices Installed: 9 AgSense Field Commander Units

Initial Device Cost: $2,100 per unit

Annual Subscription Fee (per unit): $325

Forecast Period: Short-term (Years 1–3), Long-term (Years 4–5+)

Capital Investment & Operating Costs

Category	Year 1	Year 2	Year 3	Year 4	Year 5
AgSense Hardware (9 units)	$18,900	$0	$0	$0	$0
Annual Subscription Fees	$2,925	$2,925	$2,925	$2,925	$2,925
Installation & Setup	$3,000	$0	$0	$0	$0
Maintenance & Repairs	$500	$750	$1,000	$1,000	$1,250
Total Annual Cost	$25,325	$3,675	$3,925	$3,925	$4,175

Section VII: Cost Benefit Analysis *(Applies to all applicants)*

1. Provide a detailed cost-benefit analysis for the project. This analysis should quantify the expected return on investment (ROI), outlining the financial impact of the project in both the short-term (1-3 years) and long-term (4+ years). The analysis should clearly demonstrate the financial returns of the investment.

The Shamrock Farms Precision Agriculture Connectivity Project offers a strong financial return both in the short and long term. The initial investment includes the purchase of nine AgSense Field Commander units at $2,100 each, installation and setup costs of approximately $3,000, and annual subscription fees of $325 per unit, totaling $14,625 over five years. Additional maintenance costs are estimated at $4,500 over the same period, bringing the total five-year investment to approximately $41,025.

In return, the farm is expected to realize annual benefits of around $39,000 in the first three years. These savings stem from more efficient water and fertilizer use (estimated at $30 per acre across 800 acres), yield improvements from optimized irrigation (an increase of 3–5 bushels per acre at $5 per bushel), and labor savings through remote management capabilities. In years four and five, as the system becomes fully optimized and potentially expands, annual benefits are expected to rise to $50,000 or more. By the end of year three, the cumulative net return is projected at $94,575, resulting in a 130% return on investment. Over five years, total net gains are estimated at $188,975, equating to a 361% ROI.

The project breaks even within the first year and continues to generate increasing value, demonstrating a highly favorable cost-benefit ratio. Beyond financial gains, the system also supports long-term water conservation, sustainability, and operational efficiency, making it a strategic investment for both economic resilience and environmental stewardship.

Section VIII: Monitoring and Evaluation *(Applies to all applicants)*

1. Clearly list the major milestones that will be used to track the progress of your project. This should include a timeline for deployment of connectivity OR devices and technology. Each milestone should include an expected completion date. Examples: (1) Installation of connectivity infrastructure by [insert date]. (2) Deployment of smart sensors by [insert date]. (3) Full project implementation by [insert date].

2. Identify the specific Key Performance Indicators (KPIs) that will be used to measure the success of the project following implementation. Each KPI should be measurable and aligned with the project's objectives. Examples: (1) [X]% increase in crop yield by [insert date]. (2) [X]% reduction in water usage within [insert time frame]. (3) [X] number of devices connected to the system by [insert date]. (4) [X]% improvement in farm operational efficiency by [insert date].

10–15% Reduction in Water Usage by November 30, 2025
Measured by comparing pre- and post-implementation irrigation volumes across 800 irrigated acres using AgSense flow meter data and moisture sensor feedback.

5–7% Increase in Corn and Soybean Yields by November 30, 2025
Evaluated through yield monitor data and harvest reports, based on improved water/fertilizer timing and soil condition insights from real-time monitoring.

100% Deployment of Connected Devices (9 Units) by July 1, 2025
Confirmed through system diagnostics and connectivity logs showing active status of all 9 AgSense Field Commander units and corresponding soil moisture sensors.

50% Improvement in Irrigation Decision-Making Efficiency by September 1, 2025
Quantified by comparing manual checks and pivot adjustment hours pre-project vs. system-triggered or remote changes via phone/computer access.

25–30 Hours of Labor Saved per Month Starting August 2025
Based on reduction in field visits and manual inspections due to remote access and real-time alerts, tracked in labor logs and staff time reports.

100% Staff Proficiency in System Use by June 25, 2025
Verified through completion of training sessions, user tests, and ongoing usage metrics of the AgSense platform.

3. Please explain the plan for monitoring and evaluating the success of the precision agriculture project. Include a detailed explanation of how Key Performance Indicators (KPIs) included in Section VII, field 2 above will be tracked and monitored throughout the project. Include specific metrics, tools, and timelines that will be used to track progress and measure outcomes.

1. Water Usage Reduction (10–15% by Nov. 30, 2025):
Water application volumes will be tracked using AgSense-connected flow meters installed at each pivot. These devices automatically log gallons per irrigation cycle, allowing direct comparison to historical usage data. Reports will be generated monthly and benchmarked against previous seasons to assess reduction in water use.

2. Crop Yield Increase (5–7% by Nov. 30, 2025):
Yield performance will be evaluated using yield monitor data from harvest equipment and verified with calibrated weigh wagon readings where applicable. Yield maps will be overlaid with irrigation and moisture data using GIS tools to assess correlations between improved water/fertility timing and yield gain.

3. Device Connectivity (9 units connected by July 1, 2025):
Device status will be monitored through the AgSense dashboard, which provides real-time operational verification of each Field Commander unit and soil moisture sensor. A system readiness report will be completed by July 1, 2025, confirming 100% device integration.

4. Irrigation Efficiency Improvement (50% by Sept. 1, 2025):
This will be measured by tracking the number of manual field visits and pivot adjustments before and after implementation. Staff will log labor hours and irrigation changes using a digital record-keeping tool (e.g., Google Sheets or Trello), which will be reviewed monthly to quantify operational time savings and decision-making improvements.

5. Labor Savings (25–30 hours/month starting August 2025):
Staff time logs will be maintained to capture hours previously spent on in-person pivot checks and field scouting. These will be compared against the current labor allocation after full system implementation. Verified reductions in travel and manual checks will be recorded as direct labor savings.

6. Staff Proficiency (100% by June 25, 2025):
A training completion checklist and post-training evaluation form will be used to verify that all personnel responsible for system management can successfully operate the AgSense platform, interpret moisture data, and make adjustments remotely. System usage logs will also be reviewed to confirm active engagement.

Monitoring Timeline:

Monthly: Flow data, soil moisture trends, labor logs

Quarterly: Yield projections, irrigation cycle summaries, system usage audits

End-of-Season (Nov. 30, 2025): Comprehensive project performance report with final KPI results and recommendations for scaling or improvements

Attach/Include (see Program Guide for details):

ALL Applicants Must Include:

- ☒ Attachment A. Project Budget/Documentation
- ☐ Attachment B. Eligible Entity Documentation
- ☐ Attachment C. Cybersecurity
- ☐ Attachment D. DJI Attestation
- ☐ Attachment E. Match Documentation
- ☐ Attachment F. Other Supporting documentation (if applicable)

Connectivity Subprogram Applicants Must Also Include:

- ☐ Attachment G. Legal
- ☐ Attachment H. Technical
- ☐ Attachment I. Financial Statements
- ☐ Attachment J. Rate Comparability
- ☐ Attachment K. Shapefiles
- ☐ Attachment L. Project Diagram
- ☐ Attachment M. List of Key Operational Locations

APPLICANT CERTIFICATION:

I, the undersigned Matt Sullivan [Legal Name] representing Shamrock Farms LLC [Farm/Business Name], hereby certify the eligibility of our entity/project for the Precision Agriculture Grant (PRO-AG). By signing this statement, I confirm the legal name, contact details, size, and location of the farm site(s), along with our eligibility type as a Ag Producer [Provider/Agricultural Cooperative/Agronomist/Agricultural Producer]. Attached are supporting documents validating our eligibility, and I declare adherence to all requirements outlined in Precision Agriculture Connectivity Infrastructure Grant Act (Neb. Rev. Stat. § 86-1401 et seq.) & Commission Order C-5600. I certify that all information we have submitted on this application and its supporting documents is true and correct. I certify that we are not currently using, nor will we use, prohibited communications equipment and services developed by organizations on the Federal Communications Commission's Covered List pursuant to 47 U.S.C. § 1601. I understand that the submission of any false information or failure to comply with Commission requirements may result in penalties towards me and/or my organization.

Your signature confirms the accuracy and authenticity of the provided information. It will be considered binding for all purposes related to this application and any subsequent agreements or certifications.

Matt Sullivan — Printed Name of Authorized Person

5/6/25 — Date

Owner — Title of Authorized Person

Signature of Authorized Person