Fondation Hôpital général Lakeshore
Lakeshore General Hospital Foundation

Dual-Energy CT Scan
Proposal & Benefits

As a hospital committed to advancing patient outcomes and operational efficiencies, integrating a DECT technology would represent a strategic investment in elevating the quality of care, diagnostic precision and maximizing the hospital fluidity.

Benefits of Dual-Energy CT Scanning

1. Enhanced Diagnostic Accuracy

DECT enables material differentiation based on tissue composition, providing unparalleled clarity in diagnosing conditions such as gout (via uric acid crystal detection), renal stones (by stone composition analysis), and pulmonary embolisms (through iodine perfusion maps). These capabilities reduce diagnostic uncertainty, ensuring faster and more accurate patient management.

2. Breast Imaging and Oncology Applications

Breast cancer is one of the most common malignancies we encounter, and DECT adds unique value in its evaluation:

- Improved staging and follow-up: Iodine mapping and virtual non-contrast images help distinguish enhancing tumor tissue from post-surgical scarring or radiation fibrosis. This reduces equivocal findings and unnecessary additional imaging.
- Detection of recurrence and metastases: DECT enhances sensitivity for detecting chest wall, mediastinal, and osseous metastases, which are critical for breast cancer patients.
- Alternative when MRI is limited: For patients unable to undergo breast MRI (due to claustrophobia, pacemakers, or gadolinium contraindications), DECT offers a rapid and reliable alternative for local staging and follow-up.
- Dose and contrast reduction: By generating virtual non-contrast series, DECT decreases radiation and contrast burden for oncology patients who require frequent imaging, aligning with our commitment to safety.

3. Optimized Use of Contrast Agents

DECT allows for virtual non-contrast imaging, reducing reliance on contrast agents. This is essential for oncology patients with renal insufficiency or contrast allergies, improving safety while lowering costs associated with contrast administration.

4. Reduction in Radiation Exposure

By eliminating the need for multiple scans, DECT minimizes cumulative radiation exposure. This is particularly beneficial in oncology and breast cancer populations, where patients undergo repeated staging and follow-up imaging throughout their care journey.

5. Improved Workflow Efficiency

DECT provides multiple data sets from a single scan, streamlining workflows for radiologists and technologists. This efficiency translates to quicker diagnoses, reduced patient wait times, and enhanced throughput. In addition, it allows for faster study acquisitions, resulting in quicker patient turnaround time.

6. Economic and Competitive Advantages

Acquiring a DECT scanner positions our hospital as a leader in advanced imaging. This not only attracts referrals and expands our patient base but also opens opportunities for academic collaboration and research, especially in breast cancer imaging—an area of growing innovation. Improved accuracy and fewer repeat scans directly lower operational costs in the long term.

7. Support for Advanced Applications

Beyond breast cancer and oncology, the DECT system offers applications in cardiology (evaluation of myocardial perfusion), and trauma care (bone and soft-tissue differentiation). These features cater to a wide range of specialties, further justifying its utility.

Cost Considerations and ROI

While the upfront cost of a DECT scanner is significant, the return on investment is substantial. Reduced repeat imaging, lower contrast usage, and increased patient volume contribute to financial sustainability. Additionally, improved patient outcomes lead to better hospital reputation and satisfaction scores, which can positively impact funding and partnerships.

Conclusion

A dual-energy CT scanner represents a transformative tool that will enhance diagnostic capabilities, improve patient care, reinforce our hospital's commitment to innovation. Its ability to deliver faster turnaround times is especially critical in an emergency setting, where rapid and accurate imaging can directly impact critical outcomes. Beyond emergency care, DECT offers advanced imaging features such as improved lesion detection, reduced need for contrast agents, and better tissues differentiation. While in breast imaging, it offers safer, more accurate cancer workups and meaningful alternatives to MRI. These advantages extend across multiple specialties, contributing to hospital-wide efficiency and excellence in care delivery. and allow faster turnaround times. We believe this acquisition is a crucial step forward, and we are happy to assist with further evaluations or vendor discussions.

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Dual Energy CT Scan
Financial Breakdown

Requesting a total contribution of $884,350 (over 10 years)

Clinical Benefits

- Improved tissue characterization – differentiates between materials (e.g., calcium, uric acid, iodine, fat) to give more precise diagnoses.
- Better lesion detection and classification – helps identify tumors, cysts, or stones with greater accuracy.
- Reduced need for additional imaging – one scan can provide multiple datasets (e.g., virtual non-contrast, iodine maps).
- Enhanced visualization of vessels – better detection of vascular disease, perfusion deficits, or pulmonary embolism.
- Identification of uric acid vs. calcium kidney stones – guides appropriate treatment strategies.
- Lower radiation exposure (in some cases) – because it can replace multiple separate scans.

Operational / Workflow Benefits

- Increased diagnostic confidence – radiologists can make more accurate calls, reducing uncertainty.
- Streamlined care – faster diagnosis and fewer follow-up tests.
- Supports personalized treatment – e.g., targeted therapies based on tissue type or perfusion.

10 Year Financial Breakdown

PROJECT	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10	
Dual-Energy CT Scanner	$490,000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Service Fees	Included	$31,000	$31,000	$31,000	$31,000	$31,000	$31,000	$31,000	$31,000	$31,000	
TOTAL / YEAR (BEFORE TAXES)	**$490,000**	$31,000	$31,000	$31,000	$31,000	$31,000	$31,000	$31,000	$31,000	$31,000	**$769,000** (BEFORE TAXES)
TOTAL / YEAR (AFTER TAXES)	**$563,500**	$35,650	$35,650	$35,650	$35,650	$35,650	$35,650	$35,650	$35,650	$35,650	**$884,350** (AFTER TAXES)

***As a registered non-profit organization, the Lakeshore Foundation is eligible to receive a 50% rebate on taxes from the government.