

NATIONAL RURAL UTILITIES COOPERATIVE FINANCE CORP /DC/  
Form 424B3  
July 27, 2018  
Rule 424 (b) (3)  
Registration No. 333-221261

CALCULATION OF REGISTRATION FEE

| Title of Each Class of Securities Offered | Maximum Aggregate Offering Price | Amount of Registration Fee(1)(2) |
|---|----------------------------------|----------------------------------|
| Senior Debt Security                      | \$100,000.00                     | \$12.45                          |

(1)  
Calculated in accordance with Rule 457 (r) of the Securities Act of 1933.

(2)  
The amount in this column has been transmitted to the SEC in connection with the securities offered by means of this pricing supplement.

TRADE DATE: 07/27/2018  
PRICING SUPPLEMENT NO. 7872 DATED July 27, 2018  
TO PROSPECTUS SUPPLEMENT DATED November 3, 2017  
AND BASE PROSPECTUS DATED November 1, 2017

NATIONAL RURAL UTILITIES COOPERATIVE FINANCE CORPORATION  
Medium-Term Notes, Series D  
Due Nine Months or More from Date of Issue

Principal Amount: \$100,000.00  
Issue Price: 100% of Principal Amount  
Original Issue Date: 08/01/2018  
Maturity Date: 07/15/2019  
Interest Rate: 2.68% per annum  
Regular Record Dates: Each January 1 and July 1  
Interest Payment Dates: Each January 15 and July 15  
Redemption Date: None

Agent's Commission: None

Form of Note: Certificated  
(Book-Entry or Certificated)

Other Terms: None

Medium-Term Notes, Series D may be issued by the Company in an unlimited aggregate principal amount.

#### Validity of the Medium-Term Note

In the opinion of Hogan Lovells US LLP, as counsel to the Company, when the notes offered by this pricing supplement have been executed and issued by the Company and authenticated by the trustee pursuant to the indenture, and delivered against payment as contemplated herein, such notes will constitute valid and binding obligations of the Company, subject to bankruptcy, insolvency, reorganization, receivership, moratorium and other laws affecting creditors' rights (including, without limitation, the effect of statutory and other law regarding fraudulent conveyances, fraudulent transfers and preferential transfers), and by the exercise of judicial discretion and the application of principles of equity, good faith, fair dealing, reasonableness, conscionability and materiality (regardless of whether the applicable agreements are considered in a proceeding in equity or at law).

This opinion is based as to matters of law solely on applicable provisions of the following, as currently in effect: (i) the District of Columbia Cooperative Association Act, as amended (the "Cooperative Association Act") and (ii) the laws of the State of New York (but not including any laws, statutes, ordinances, administrative decisions, rules or regulations of any political subdivision below the state level). In addition, this opinion is subject to customary assumptions about the trustee's authorization, execution and delivery of the indenture and its authentication of the notes and the validity, binding nature and enforceability of the indenture with respect to the trustee, all as stated in the letter of such counsel dated November 3, 2017, which has been filed as an exhibit to a Current Report on Form 8-K by the Company on November 3, 2017.